UNITED STATES SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 10-K

☑ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the Fiscal Year Ended September 30, 2022

OR

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the Transition Period From _____ To _____

Commission File Number 001-13836

JOHNSON CONTROLS INTERNATIONAL PLC

(Exact name of registrant as specified in its charter)

Ireland	**98-0390500**
(Jurisdiction of Incorporation)	(I.R.S. Employer Identification No.)
One Albert Quay, Cork, Ireland, T12 X8N6	**(353) 21-423-5000**
(Address of Principal Executive Offices and Postal Code)	(Registrant's Telephone Number)

Securities Registered Pursuant to Section 12(b) of the Exchange Act:

Title of Each Class	Trading Symbol	Name of Each Exchange on Which Registered
Ordinary Shares, Par Value $0.01	JCI	New York Stock Exchange
4.625% Notes due 2023	JCI23	New York Stock Exchange
1.000% Senior Notes due 2023	JCI23A	New York Stock Exchange
3.625% Senior Notes due 2024	JCI24A	New York Stock Exchange
1.375% Notes due 2025	JCI25A	New York Stock Exchange
3.900% Notes due 2026	JCI26A	New York Stock Exchange
0.375% Senior Notes due 2027	JCI27	New York Stock Exchange
3.000% Senior Notes due 2028	JCI28	New York Stock Exchange
1.750% Senior Notes due 2030	JCI30	New York Stock Exchange
2.000% Sustainability-Linked Senior Notes due 2031	JCI31	New York Stock Exchange
1.000% Senior Notes due 2032	JCI32	New York Stock Exchange
4.900% Senior Notes due 2032	JCI32A	New York Stock Exchange
6.000% Notes due 2036	JCI36A	New York Stock Exchange
5.70% Senior Notes due 2041	JCI41B	New York Stock Exchange
5.250% Senior Notes due 2041	JCI41C	New York Stock Exchange
4.625% Senior Notes due 2044	JCI44A	New York Stock Exchange
5.125% Notes due 2045	JCI45B	New York Stock Exchange
6.950% Debentures due December 1, 2045	JCI45A	New York Stock Exchange
4.500% Senior Notes due 2047	JCI47	New York Stock Exchange
4.950% Senior Notes due 2064	JCI64A	New York Stock Exchange

Securities Registered Pursuant to Section 12(g) of the Exchange Act: **None**

Indicate by check mark whether the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☑ No ☐

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Exchange Act. Yes ☐ No ☑

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Exchange Act during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☑ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☑ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	☑	Accelerated filer	☐
Non-accelerated filer	☐	Smaller reporting company	☐
Emerging growth company	☐		

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report ☑

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☑

As of March 31, 2022, the aggregate market value of Johnson Controls International plc Common Stock held by non-affiliates of the registrant was approximately $45.5 billion based on the closing sales price as reported on the New York Stock Exchange. As of October 31, 2022, 686,703,889 ordinary shares, par value $0.01 per share, were outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the definitive Proxy Statement to be delivered to shareholders in connection with the annual general meeting of shareholders to be held on March 8, 2023 are incorporated by reference into Part III.

JOHNSON CONTROLS INTERNATIONAL PLC

Index to Annual Report on Form 10-K

Year Ended September 30, 2022

CAUTIONARY STATEMENTS FOR FORWARD-LOOKING INFORMATION

Unless otherwise indicated, references to "Johnson Controls," the "Company," "we," "our" and "us" in this Annual Report on Form 10-K refer to Johnson Controls International plc and its consolidated subsidiaries.

The Company has made statements in this document that are forward-looking and therefore are subject to risks and uncertainties. All statements in this document other than statements of historical fact are, or could be, "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995. In this document, statements regarding the Company's future financial position, sales, costs, earnings, cash flows, other measures of results of operations, synergies and integration opportunities, capital expenditures, debt levels and market outlook are forward-looking statements. Words such as "may," "will," "expect," "intend," "estimate," "anticipate," "believe," "should," "forecast," "project" or "plan" and terms of similar meaning are also generally intended to identify forward-looking statements. However, the absence of these words does not mean that a statement is not forward-looking. The Company cautions that these statements are subject to numerous important risks, uncertainties, assumptions and other factors, some of which are beyond the Company's control, that could cause the Company's actual results to differ materially from those expressed or implied by such forward-looking statements, including, among others, risks related to: The Company's ability to manage general economic, business and capital market conditions, including the impact of recessions and economic downturns; the ability to manage macroeconomic and geopolitical volatility, including global price inflation, shortages impacting the availability of raw materials and component products and the conflict between Russia and Ukraine; the ability to develop or acquire new products and technologies that achieve market acceptance and meet applicable regulatory requirements; the strength of the U.S. or other economies; fluctuations in currency exchange rates; changes or uncertainty in laws, regulations, rates, policies or interpretations that impact the Company's business operations or tax status; changes to laws or policies governing foreign trade, including economic sanctions, tariffs or trade restrictions; maintaining and improving the capacity, reliability and security of the Company's enterprise information technology infrastructure; the ability to manage the lifecycle cybersecurity risk in the development, deployment and operation of the Company's digital platforms and services; the outcome of litigation and governmental proceedings; the risk of infringement or expiration of intellectual property rights; the Company's ability to manage the impacts of natural disasters, climate change, pandemics and outbreaks of contagious diseases and other adverse public health developments, such as the COVID-19 pandemic; the ability of the Company to drive organizational improvement; any delay or inability of the Company to realize the expected benefits and synergies of recent portfolio transactions; the ability to hire and retain senior management and other key personnel; the tax treatment of recent portfolio transactions; significant transaction costs and/or unknown liabilities associated with such transactions; labor shortages, work stoppages, union negotiations, labor disputes and other matters associated with the labor force; and the cancellation of or changes to commercial arrangements. A detailed discussion of risks related to Johnson Controls' business is included in the section entitled "Risk Factors" (refer to Part I, Item 1A, of this Annual Report on Form 10-K). The forward-looking statements included in this document are made only as of the date of this document, unless otherwise specified, and, except as required by law, Johnson Controls assumes no obligation, and disclaims any obligation, to update such statements to reflect events or circumstances occurring after the date of this document.

PART I

ITEM 1 BUSINESS

General

Johnson Controls International plc, headquartered in Cork, Ireland, is a global leader in smart, healthy and sustainable buildings, serving a wide range of customers in more than 150 countries. The Company's products, services, systems and solutions advance the safety, comfort and intelligence of spaces to serve people, places and the planet. The Company is committed to helping its customers win and creating greater value for all of its stakeholders through its strategic focus on buildings.

Johnson Controls was originally incorporated in the state of Wisconsin in 1885 as Johnson Electric Service Company to manufacture, install and service automatic temperature regulation systems for buildings and was renamed Johnson Controls, Inc. in 1974. In 2005, Johnson Controls acquired York International, a global supplier of heating, ventilating, air-conditioning ("HVAC") and refrigeration equipment and services. In 2014, Johnson Controls acquired Air Distribution Technologies, Inc., one of the largest independent providers of air distribution and ventilation products in North America. In 2015, Johnson Controls formed a joint venture with Hitachi to expand its building related product offerings. In 2016, Johnson Controls, Inc. and Tyco International plc ("Tyco") completed their combination (the "Merger"), combining Johnson Controls' portfolio of building efficiency solutions with Tyco's portfolio of fire and security solutions. Following the Merger, Tyco changed its name to "Johnson Controls International plc."

In 2016, the Company completed the spin-off of its automotive business into Adient plc, an independent, publicly traded company. In 2019, the Company closed the sale of its Power Solutions business, completing the Company’s transformation into a pure-play building technologies and solutions provider.

The Company is a global leader in engineering, manufacturing and commissioning building products and systems, including residential and commercial HVAC equipment, industrial refrigeration systems, controls, security systems, fire-detection systems and fire-suppression solutions. The Company further serves customers by providing technical services, including maintenance, management, repair, retrofit and replacement of equipment (in the HVAC, industrial refrigeration, security and fire-protection space), and energy-management consulting. In 2020, the Company launched its OpenBlue software platform, enabling enterprises to manage all aspects of their physical spaces by combining the Company's building products and services with cutting-edge technology and digital capabilities to enable data-driven “smart building” services and solutions. The Company partners with customers by leveraging its broad product portfolio and digital capabilities powered by OpenBlue, together with its direct channel service and solutions capabilities, to deliver outcome-based solutions across the lifecycle of a building that address customers’ needs to improve energy efficiency, enhance security, create healthy environments and reduce greenhouse gas emissions.

Business Segments

The Company conducts its business through four business segments: Building Solutions North America, Building Solutions EMEA/LA, Building Solutions Asia Pacific and Global Products.

Building Solutions North America: Building Solutions North America designs, sells, installs and services HVAC, controls, building management, refrigeration, integrated electronic security and integrated fire-detection and suppression systems for commercial, industrial, retail, small business, institutional and governmental customers in the United States and Canada. Building Solutions North America also provides energy efficiency solutions and technical services, including inspection, scheduled maintenance, and repair and replacement of mechanical and controls systems, as well as data-driven “smart building” solutions, to non-residential building and industrial applications in the United States and Canadian marketplace.

Building Solutions EMEA/LA: Building Solutions EMEA/LA designs, sells, installs and services HVAC, controls, building management, refrigeration, integrated electronic security, integrated fire-detection and suppression systems, and provides technical services, including data-driven “smart building” solutions, to markets in Europe, the Middle East, Africa and Latin America.

Building Solutions Asia Pacific: Building Solutions Asia Pacific designs, sells, installs and services HVAC, controls, building management, refrigeration, integrated electronic security, integrated fire-detection and suppression systems, and provides technical services, including data-driven “smart building” solutions, in the Asia Pacific marketplace.

Global Products: Global Products designs, manufactures and sells HVAC equipment, controls software and software services for residential and commercial applications to commercial, industrial, retail, residential, small business, institutional and governmental customers worldwide. In addition, Global Products designs, manufactures and sells refrigeration equipment and controls globally. The Global Products business also designs, manufactures and sells fire protection, fire suppression and security products, including intrusion security, anti-theft devices, access control, and video surveillance and management systems, for commercial, industrial, retail, residential, small business, institutional and governmental customers worldwide. Global Products includes the Johnson Controls-Hitachi joint venture.

For more information on the Company’s segments, refer to Note 19, "Segment Information," of the notes to consolidated financial statements.

Products, Systems, Services and Solutions

The Company sells and installs its commercial HVAC equipment and systems, control systems, security systems, fire-detection and fire suppression systems, equipment and services primarily through its extensive direct channel, consisting of a global network of sales and service offices. Significant sales are also generated through global third-party channels, such as distributors of air-conditioning, controls, security and fire-detection and suppression products. The Company’s large base of current customers leads to significant repeat business for the maintenance, retrofit and replacement markets. The Company is also able to leverage its installed base to generate sales for its service business. Trusted building brands, such as YORK®, Hitachi Air Conditioning, *Metasys*®, Ansul, *Ruskin*®, Titus®, Frick®, PENN®, Sabroe®, Silent-Aire®, Simplex® and

Grinnell®, together with the breadth and depth of the products, systems and solutions offered by the Company, give it what it believes to be the most diverse portfolio in the building technology industry.

The Company has developed software platforms, including on-premises platforms and cloud-based software services, and integrated its products and services with digital capabilities to provide data-driven solutions to create smarter, safer and more sustainable buildings. The Company's OpenBlue platform enables enterprises to manage all aspects of their physical spaces delivering sustainability, new occupant experiences, safety and security by combining the Company's building expertise with cutting-edge technology, including AI-powered service solutions such as remote diagnostics, predictive maintenance, compliance monitoring and advanced risk assessments. The Company leverages its digital and data-driven products and services to offer integrated and customizable solutions focused on delivering outcomes to customers, including OpenBlue Buildings-as-a-Service, OpenBlue Net Zero Buildings-as-a-Service and OpenBlue Healthy Buildings. These services are generally designed to generate recurring revenue for the Company as it supports its customers in achieving their desired outcomes.

In fiscal 2022, approximately 37% of sales originated from product offerings, 39% of sales originated from installations and 24% of sales originated from service offerings.

Competition

The Company conducts its operations through a significant number of individual contracts that are either negotiated or awarded on a competitive basis. Key factors in the award of contracts include system and service performance, quality, price, design, reputation, technology, application engineering capability and construction or project management expertise. Competitors for HVAC equipment, security, fire-detection, fire suppression and controls in the residential and non-residential marketplace include many local, regional, national and international providers. Larger competitors include Honeywell International, Inc.; Siemens Smart Infrastructure, an operating group of Siemens AG; Schneider Electric SA; Carrier Global Corporation; Trane Technologies plc; Daikin Industries, Ltd.; Lennox International, Inc.; GC Midea Holding Co, Ltd. and Gree Electric Appliances, Inc. In addition, the Company competes in a highly fragmented building services market. The Company also faces competition from a diverse range of established companies, start-ups and other emerging entrants to the buildings industry in the areas of digital services, software as a service and the Internet of Things. The loss of any individual contract or customer would not have a material adverse effect on the Company.

Business Strategy

The Company's business strategy is to sustain and expand its position as a leader in smart and sustainable building solutions by offering a full spectrum of products and solutions for customer buildings across the globe. The Company's core strategy remains focused on creating growth platforms, driving operational improvements and creating a high-performance culture. The Company has strong positions in attractive and growing end-markets across HVAC, controls, fire, security and services, enhanced by its comprehensive product portfolio and substantial installed base. The Company believes that it is well positioned to capitalize on the emerging and prevalent trends in the buildings industry, including sustainability, healthy buildings/indoor environmental quality and smart buildings. To capitalize on these trends, the Company remains focused on maintaining leading positions in commercial HVAC and building management systems, as well as enabling growth through digital, to develop and leverage new digital technologies and capabilities into outcomes powered by its OpenBlue software platform. In furtherance of these goals, the Company has three strategic priorities:

Capitalize on Key Growth Vectors: Sustainability, healthy buildings/indoor environmental quality and smart buildings represent key growth opportunities for the Company. The Company seeks to leverage its existing portfolio breadth and investments in product development, combined with the expansion of its digital products and capabilities powered by OpenBlue, to offer differentiated solutions and innovative deal structures to help customers achieve their objectives. The Company intends to expand its capabilities by investing in products and technologies, as well as expanding its partnerships, to power innovation that will allow it to provide differentiated services that are tailored to its customers' desired outcomes.

Accelerate in High Growth Digital Services, Regions and Verticals: The Company is focused on transforming its large service business through its digital technologies, further enabled by the Company's installed base, domain expertise and global coverage. The Company is focused on developing and deploying connected equipment, systems and controls that will support the provision of digital services and solutions. The Company further intends to expand its presence in high growth regions and invest in high growth verticals within the markets it serves, including healthcare, commercial offices/campus, education and data centers.

Sustain a High-Performance, Customer-Centric Culture: The Company recognizes that developing talent and creating positive customer experiences is central to accomplishing its business strategies. The Company is investing in its talent to build a diverse workforce that is digital capable, solutions oriented and focused on continuous learning and growth. The Company aims to leverage its talent capabilities and training to create a customer-focused culture to drive customer loyalty and decisions.

To realize these priorities, the Company is leveraging its technology leadership, comprehensive product portfolio, global presence, substantial installed base and strong channels to monetize the lifecycle opportunities of install, service, retrofit and replacement which are established and delivered by the Company's direct field businesses and third-party channels across the globe. The Company is augmenting its strategic priorities with disciplined execution, productivity enhancements and sustainable cost management to create a path to realize expanded margins and enhanced profitability.

Backlog

The Company's backlog is applicable to its sales of systems and services. At September 30, 2022, the backlog was $11.7 billion, of which $11.1 billion was attributable to the field business. The backlog amount outstanding at any given time is not necessarily indicative of the amount of revenue to be earned in the upcoming fiscal year.

At September 30, 2022, remaining performance obligations were $17.5 billion, which is $5.8 billion higher than the Company's backlog of $11.7 billion. Differences between the Company's remaining performance obligations and backlog are primarily due to the following:

- Remaining performance obligations include large, multi-purpose contracts to construct hospitals, schools and other governmental buildings, which are services to be performed over the building's lifetime with average initial contract terms of 25 to 35 years for the entire term of the contract versus backlog which includes only the lifecycle period of these contracts which approximates five years;
- Remaining performance obligations exclude certain customer contracts with a term of one year or less and contracts that are cancelable without substantial penalty versus backlog which includes short-term and cancelable contracts; and
- Remaining performance obligations include the full remaining term of service contracts with substantial termination penalties versus backlog which includes one year for all outstanding service contracts.

The Company will continue to report backlog as it believes it is a useful measure of evaluating the Company's operational performance and relationship to total orders.

Raw Materials

Raw materials used by the Company's businesses in connection with their operations include steel, aluminum, brass, copper, polypropylene and certain flurochemicals used in fire suppression agents. The Company also uses semiconductors and other electronic components in the manufacture of its products. During fiscal 2022, the Company experienced material cost increases due to global inflation, supply chain disruptions, labor shortages, increased demand and other regulatory and macroeconomic factors. These trends had an unfavorable impact on the Company's results of operations in fiscal 2022, as discussed in Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations. The Company believes that the macroeconomic trends experienced in fiscal 2022 will continue into fiscal 2023. Therefore, the Company could experience further disruptions, shortages and price inflation in the future, the effect of which will depend on the Company's ability to successfully mitigate and offset the impact of these events. In fiscal 2023, commodity prices and availability could fluctuate throughout the year and could significantly affect the Company's results of operations. For a more detailed description of the risks related to the availability of raw materials, components and commodities, see Item 1A. Risk Factors.

Intellectual Property

Generally, the Company seeks statutory protection for strategic or financially important intellectual property developed in connection with its business. Certain intellectual property, where appropriate, is protected by contracts, licenses, confidentiality or other agreements. From time to time, the Company takes action to protect its businesses by asserting its intellectual property rights against third-party infringers.

The Company owns numerous U.S. and non-U.S. patents (and their respective counterparts), the more important of which cover those technologies and inventions embodied in current products or which are used in the manufacture of those products. While the Company believes patents are important to its business operations and in the aggregate constitute a valuable asset, no single patent, or group of patents, is critical to the success of the business. The Company, from time to time, grants licenses under its patents and technology and receives licenses under patents and technology of others.

The Company's trademarks, certain of which are material to its business, are registered or otherwise legally protected in the U.S. and many non-U.S. countries where products and services of the Company are sold. The Company, from time to time, becomes involved in trademark licensing transactions.

Most works of authorship produced for the Company, such as computer programs, catalogs and sales literature, carry appropriate notices indicating the Company's claim to copyright protection under U.S. law and appropriate international treaties.

Environmental, Health and Safety Matters

Laws addressing the protection of the environment and workers' safety and health govern the Company's ongoing global operations. They generally provide for civil and criminal penalties, as well as injunctive and remedial relief, for noncompliance or require remediation of sites where Company-related materials have been released into the environment.

A portion of the Company's products consume energy and use refrigerants. Increased public awareness and concern regarding global climate change has resulted in more regulations designed to reduce greenhouse gas emissions. These regulations tend to be implemented under global, national and sub-national climate objectives or policies, and target the global warming potential ("GWP") of refrigerants, equipment energy efficiency, and the combustion of fossil fuels as a heating source. The Company continues to invest in its product portfolio to meet emerging emissions regulations and standards.

The Company has expended substantial resources globally, both financial and managerial, to comply with environmental laws and worker safety laws and maintains procedures designed to foster and ensure compliance. Certain of the Company's businesses are, or have been, engaged in the handling or use of substances that may impact workplace health and safety or the environment. The Company is committed to protecting its workers and the environment against the risks associated with these substances.

The Company's operations and facilities have been, and in the future may become, the subject of formal or informal enforcement actions or proceedings for noncompliance with environmental laws and worker safety laws or for the remediation of Company-related substances released into the environment. Such matters typically are resolved with regulatory authorities through commitments to compliance, abatement or remediation programs and, in some cases, payment of penalties. See Note 21, "Commitments and Contingencies," of the notes to consolidated financial statements for further discussion of environmental matters.

Government Regulation and Supervision

The Company's operations are subject to numerous federal, state and local laws and regulations, both within and outside the United States, in areas such as consumer protection, government contracts, international trade, environmental protection, labor and employment, tax, licensing and others. For example, most U.S. states and non-U.S. jurisdictions in which the Company operates have licensing laws directed specifically toward the alarm and fire suppression industries. The Company's security businesses currently rely extensively upon the use of wireline and wireless telephone service to communicate signals. Wireline and wireless telephone companies in the U.S. are regulated by the federal and state governments. In addition, government regulation of fire safety codes can impact the Company's fire businesses. The Company's businesses may also be affected by changes in governmental regulation of refrigerants and energy efficiency standards, noise regulation and product safety regulations, including changes related to hydro fluorocarbons/emissions reduction efforts, energy conservation standards and the regulation of fluorinated gases. These and other laws and regulations impact the manner in which the Company conducts its business, and changes in legislation or government policies can affect the Company's worldwide operations, both favorably and unfavorably. For a more detailed description of the various laws and regulations that affect the Company's business, see Item 1A. Risk Factors.

Regulatory Capital Expenditures

The Company's efforts to comply with numerous federal, state and local laws and regulations applicable to its business and products often results in capital expenditures. The Company makes capital expenditures to design and upgrade its fire and security products to comply with or exceed standards applicable to the alarm, fire suppression and security industries. The Company also makes capital expenditures to meet or exceed energy efficiency standards, including the regulation of refrigerants, hydro fluorocarbons/emissions reductions efforts and the regulation of fluorinated gasses, particularly with respect to the Company's HVAC products and solutions. The Company's ongoing environmental compliance program also results in capital expenditures. Regulatory and environmental considerations are a part of all significant capital expenditure decisions; however, expenditures in fiscal 2022 related solely to regulatory compliance were not material. It is management's expectation that the amount of any future capital expenditures related to compliance with any individual regulation or grouping of related regulations will not have a material adverse effect on the Company's financial results or competitive position in any one year. See Note 21, "Commitments and Contingencies," of the notes to consolidated financial statements for further discussion of environmental matters.

Human Capital Management

Overview and Governance

The Company strives to continuously drive and develop its High-Performance Culture. The Company's High-Performance Culture represents the practices and behaviors, underpinned by the Company's values, that lead to sustained growth, winning results and satisfied customers.

The responsibility to develop and maintain a High-Performance Culture is owned, embedded and executed throughout the Company. The Chief Human Resources Officer ("CHRO") is responsible for establishing the Company's strategy to drive a High-Performance Culture and ensuring its execution across the Company. The Compensation and Talent Development Committee of the Board of Directors is the primary overseer of the Company's High-Performance Culture strategy and execution. The Chief Executive Officer ("CEO"), the CHRO, the Vice President of Diversity and Inclusion and other senior leaders within the Company are responsible for the execution of the strategy and engage with the Compensation and Talent Development Committee, the Governance and Sustainability Committee and the full Board of Directors on the critical components driving the Company's High-Performance Culture, including discussions of human capital trends, practices and operations, diversity and inclusion, health and safety, leadership development and succession planning. Key components driving the Company's High-Performance Culture include:

Health and Safety

Health and Wellness, Safety and Environment are the three pillars of the Company's Zero Harm vision. The Company's health and safety programs are designed around global standards with appropriate variations addressing multiple jurisdictions and regulations, specific hazards and unique working environments of the Company's manufacturing, service and install, and headquarter operations. In its continuous efforts to ensure the health, safety and well-being of its employees and workplaces, during fiscal 2022, the Company created new Zero Harm Well-Being and Zero Harm Sustainability Behaviors, each of them consisting of ten guiding principles to protect employees and the environment. In addition, the Company launched a vehicle telematics program to identify unsafe driving practices and further reduce the occurrence of motor vehicle accidents. Today, the Company's focus on employee well-being continues with the utilization of global and regional well-being councils, addressing physical, mental, social and financial aspects of employee well-being.

The Company requires each of its locations to perform regular safety audits to ensure proper safety policies, program procedures, analyses and training are in place. In addition, the Company engages an independent third-party conformity assessment and certification vendor to audit selected operations for adherence to its global health and safety standards. Safety culture and behavior-based safety initiatives have been deployed within the Company, including a multi-faceted policy focused on preventing distracted driving and the design and rollout of a new style of platform ladder built to provide a safe working platform for employees. One safety policy that applies to all employees around the globe, regardless of rank, is every individual worker's right to apply the "Stop Work" principle when uncertain about the health and safety of a particular task.

The Company utilizes a mixture of leading and lagging indicators to assess the health and safety performance of its operations. Lagging indicators include the OSHA Total Recordable Incident Rate ("TRIR") and the Lost Time (or Lost Workday) Incident Rate ("LTIR") based upon the number of incidents per 100 employees (or per 200,000 work hours). In fiscal 2022, the Company had a TRIR of 0.40 and a LTIR of 0.14.

Diversity and Inclusion

Diversity and inclusion are embedded throughout the Company's strategy to drive a High-Performance Culture. The Company recognizes that an inclusive culture that is diverse adds value to the Company and its customers through: the creation and delivery of innovative and outstanding products, services and outcomes; the cultivation of an engaged and empowered environment where employee productivity drives company growth; and the onboarding of high-performing talent into the organization to propel the Company's transformation and future. The Company believes that all employees and leaders are responsible for creating a diverse and inclusive workplace. Employees are empowered to take an active role in creating a culture that values uniqueness, celebrates creativity and drives innovation. The Company places a high value on inclusion, engaging employees in Business Resource Groups ("BRGs") — employee-led voluntary organizations of people with similar interests, experiences, or demographic characteristics. The Company maintains its BRG chapters worldwide across nine categories: African American, Asia Pacific, LGBTQ+, Emerging Leaders, Hispanic, Disabilities, Veterans, Women and Sustainability. The Company uses these groups to serve as a source of inclusion and to support the acquisition and development of diverse talent internally and externally. Each BRG is open to all employees and sponsored and supported by senior leaders across the enterprise. The Company's BRG structure includes monthly learning series, an active recruitment platform, an innovation hub, and community engagement. In fiscal 2022, the Company continued to realize meaningful growth in BRG membership.

The Company has implemented several measures that focus on ensuring accountabilities exist for making progress in diversity:

- **Diversity Performance Goals:** The CEO and other senior leaders have diversity and inclusion objectives in their annual performance goals.

- **Attracting Diverse Talent:** The Company commits to having a diverse talent pipeline by partnering with its business units in their workforce planning forecasts, as well as external organizations, to develop initiatives and goals to recruit diverse talent across all leadership and skill areas. In furtherance of this commitment, the Company continues to enhance its Future Leaders Internship Program, an enterprise-wide internship program designed to build a sustainable, diverse pipeline of talent with the critical skills needed to support the Company's growth initiatives.

- **Facilitating Engagement:** The Company launched the Perspectives Listening Series to facilitate honest, courageous and authentic conversations between colleagues on topics that are relevant and important to employees, communities and society as a whole. Topics covered include next generation leadership, gender equality, the social justice movement and fatherhood.

Talent Development

To maintain a High-Performance Culture, the Company must ensure the continued development and advancement of its people. Strategic talent reviews and succession planning occur on a planned cadence annually – globally and across all business areas. The Company continues to provide opportunities for the Company's employees to grow their careers, with approximately half of open management positions filled internally during fiscal year 2022.

The Company believes that high performance is an outcome of a person's ability to change, adapt, and grow their capabilities throughout their career. The Company emphasizes real-life, real-time learning that enables a person to meet the demands of challenging and changing work and focuses on reinforcing key principles that are designed to support an individual's effectiveness in his or her current job and in their future development. The Company provides technical and leadership training to employees, customers and suppliers who work for or with the Company's products and services. In particular, the Company's focus on employee development has been structured over the last several years through programs designed to imbed essential skills and reinforce strategic goals that are aligned to the Company's culture, including:

- **Digital Transformation:** In support of Company's growth strategy, the Company is investing in developing digital leadership with personalized and targeted training programs designed to create digitally capable leaders, salespersons and technicians.

- **Diversity and Inclusion:** The Company has developed a structured diversity and inclusion training continuum across the levels and stages of individuals' careers to develop and align employees with the Company's diversity and inclusion strategy and values.

- **Organizational Health:** The Company regularly assesses its progress using an Organizational Health Index survey and develops annual health plans comprised of priority initiatives to drive key behaviors and practices that is informed by the survey's results. These plans are specifically tailored for each business unit and regularly assessed during the year, with managers accountable for introducing and teaching new skills or toolsets to their teams.

In fiscal 2022, the Company offered a robust curriculum of over 232,000 learning activities available to employees, consisting of videos, courses, e-learning, documentation, articles and books, including over 4,000 active (in person or virtual) learning courses. In fiscal 2022, over 1.25 million learning activities were completed by approximately 93,000 employees. The total learning hours consumed by employees was 1.02 million hours, averaging almost 11 hours per employee including time invested in formal learning and standard time invested in self-paced reading or video consumption.

Employee Population and Demographics

As of September 30, 2022, the Company employed approximately 102,000 people worldwide, of which approximately 38,000 were employed in the United States and approximately 64,000 were outside the United States. Approximately 22,000 employees are covered by collective bargaining agreements or works councils and the Company believes that its relations with its labor unions are generally positive.

Employee Diversity as of September 30, 2022

Employees	Male	Female	Minority [1]
Total	76%	24%	30%
Managers	80%	20%	21%

[1] Male and female data represents all employees globally. Minority data represents U.S. employees only.

Seasonal Factors

Certain of the Company's sales are seasonal as the demand for residential air conditioning equipment and services generally increases in the summer months. This seasonality is mitigated by the other products and services provided by the Company that have no material seasonal effect.

Research and Development Expenditures

Refer to Note 1, "Summary of Significant Accounting Policies," of the notes to consolidated financial statements for research and development expenditures. The Company has committed to invest a substantial portion of its new product research and development in climate-related innovation to develop sustainable products and services. The Company invests in enhancements to the capabilities of its product lines and services to support its strategy, meet consumer preferences and achieve regulatory compliance. This includes investments in the development of the Company’s OpenBlue platform and related service offerings, digital product capabilities, energy efficiency and low GWP refrigerants and technology.

Available Information

The Company’s filings with the U.S. Securities and Exchange Commission ("SEC"), including annual reports on Form 10-K, quarterly reports on Form 10-Q, definitive proxy statements on Schedule 14A, current reports on Form 8-K, and any amendments to those reports filed pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934, are made available free of charge through the Investor Relations section of the Company’s Internet website at http://www.johnsoncontrols.com as soon as reasonably practicable after the Company electronically files such material with, or furnishes it to, the SEC. Copies of any materials the Company files with the SEC can also be obtained free of charge through the SEC’s website at http://www.sec.gov. The Company also makes available, free of charge, its Code of Ethics, Corporate Governance Guidelines, Board of Directors committee charters and other information related to the Company on the Company’s Internet website or in printed form upon request. The Company is not including the information contained on the Company’s website as a part of, or incorporating it by reference into, this Annual Report on Form 10-K.

ITEM 1A RISK FACTORS

Provided below is a cautionary discussion of what we believe to be the most important risk factors applicable to the Company. Discussion of these factors is incorporated by reference into and considered an integral part of Part II, Item 7, "Management's Discussion and Analysis of Financial Conditions and Results of Operations." The disclosure of a risk should not be interpreted to imply that such risk has not already materialized. Additional risks not currently known to the Company or that the Company currently believes are immaterial may also impair the Company's business, financial condition, results of operations and cash flows.

Risks Related to Macroeconomic and Political Conditions

Economic, political, credit and capital market conditions could adversely affect our financial performance, our ability to grow or sustain our business and our ability to access the capital markets.

We compete around the world in various geographic regions and product markets. Global economic and political conditions affect each of our primary businesses and the businesses of our customers and suppliers. Recessions, economic downturns, price instability, inflation, slowing economic growth and social and political instability in the industries and/or markets where we compete could negatively affect our revenues and financial performance in future periods, result in future restructuring charges, and adversely impact our ability to grow or sustain our business. For example, current macroeconomic and political instability caused by the conflict between Russia and Ukraine, global supply chain disruptions, inflation and the strengthening of the U.S. dollar, have and could continue to adversely impact our results of operations. Other potential consequences arising from the Russia/Ukraine conflict and its effect on our business and results of operations as well as the global economy, cannot be predicted. This may include further sanctions, embargoes, regional instability, geopolitical shifts, energy instability, potential retaliatory action by the Russian government, increased cybersecurity attacks, increased tensions among countries in which we operate.

The capital and credit markets provide us with liquidity to operate and grow our business beyond the liquidity that operating cash flows provide. A worldwide economic downturn and/or disruption of the credit markets could reduce our access to capital necessary for our operations and executing our strategic plan. If our access to capital were to become significantly constrained, or if costs of capital increased significantly due to lowered credit ratings, prevailing industry conditions, the volatility of the capital markets or other factors; then our financial condition, results of operations and cash flows could be adversely affected.

If we are unable to adequately react to negative economic impacts that decrease demand for our products and services and/or negative movements in capital markets our results of operations, financial condition or liquidity could be adversely affected.

Some of the industries in which we operate are cyclical and, accordingly, demand for our products and services could be adversely affected by downturns in these industries.

Much of the demand for installation of HVAC, security products, and fire detection and suppression solutions is driven by commercial and residential construction and industrial facility expansion and maintenance projects. Commercial and residential construction projects are heavily dependent on general economic conditions, localized demand for commercial and residential real estate and availability of credit. Commercial and residential real estate markets are prone to significant fluctuations in supply and demand. In addition, most commercial and residential real estate developers rely heavily on project financing in order to initiate and complete projects. Declines in real estate values and increases in prevailing interest rates could lead to significant reductions in the demand for and availability of project financing, even in markets where demand may otherwise be sufficient to support new construction. These factors could in turn temper demand for new HVAC, fire detection and suppression and security installations.

Levels of industrial capital expenditures for facility expansions and maintenance are dependent on general economic conditions, economic conditions within specific industries we serve, expectations of future market behavior and available financing. The businesses of many of our industrial customers are to varying degrees cyclical and have experienced periodic downturns. During such economic downturns, customers in these industries tend to delay major capital projects, including greenfield construction, maintenance projects and upgrades. Additionally, demand for our products and services may be affected by volatility in energy, component and commodity prices, commodity and component availability and fluctuating demand forecasts, as our customers may be more conservative in their capital planning, which may reduce demand for our products and services as projects are postponed or cancelled. Although our industrial customers tend to be less dependent on project financing than real estate developers, increases in prevailing interest rates or disruptions in financial markets and banking systems could make credit and capital markets difficult for our customers to access and could significantly raise the cost of new debt for our customers. Any difficulty in accessing these markets and the increased associated costs can have a negative effect on investment in large capital projects, including necessary maintenance and upgrades, even during periods of favorable end-market conditions.

Many of our customers inside and outside of the industrial and commercial sectors, including governmental and institutional customers, have experienced budgetary constraints as sources of revenue have been negatively impacted by adverse or stagnant economic conditions. These budgetary constraints have in the past, and may in the future, reduce demand for our products and services among governmental and institutional customers.

Reduced demand for our products and services could result in the delay or cancellation of existing orders or lead to excess capacity, which unfavorably impacts our absorption of fixed costs. This reduced demand may also erode average selling prices in the industries we serve. Any of these results could materially and adversely affect our business, financial condition, results of operations and cash flows.

Volatility in commodity prices may adversely affect our results of operations.

Increases in commodity costs can negatively impact the profitability of orders in backlog as prices on such orders are typically fixed; therefore, in the short-term, our ability to adjust for changes in certain commodity prices is limited. In these cases, if we are not able to recover commodity cost increases through price increases to our customers on new orders, then such increases will have an adverse effect on our results of operations. In cases where commodity price risk cannot be naturally offset or hedged through supply-based fixed-price contracts, we use commodity hedge contracts to minimize overall price risk associated with our anticipated commodity purchases. Unfavorability in our hedging programs during a period of declining commodity prices could result in lower margins as we reduce prices to match the market on a fixed commodity cost level. Additionally, to the extent we do not or are unable to hedge certain commodities and the commodity prices substantially increase, such increases will have an adverse effect on our results of operations.

We have experienced, and expect to continue to experience, increased commodity costs as a result of global macroeconomic trends, including global price inflation, supply chain disruption and the Russia/Ukraine conflict. While we have taken action to offset increasing commodity costs as described above, we have nonetheless experienced negative impacts on profitability as a result of such increased costs. Continued increases in commodity costs could negatively impact our results of operations to the extent we are unable to successfully mitigate and offset the impact of increased costs.

Risks associated with our non-U.S. operations could adversely affect our business, financial condition and results of operations.

We have significant operations in a number of countries outside the U.S., some of which are located in emerging markets. Long-term economic and geopolitical uncertainty in any of the regions of the world in which we operate, such as Asia, South America, the Middle East, Europe and emerging markets, could result in the disruption of markets and negatively affect cash flows from our operations to cover our capital needs and debt service requirements.

In addition, as a result of our global presence, a significant portion of our revenues and expenses is denominated in currencies other than the U.S. dollar. We are therefore subject to non-U.S. currency risks and non-U.S. exchange exposure. While we employ financial instruments to hedge some of our transactional foreign exchange exposure, these activities do not insulate us completely from those exposures. Exchange rates can be volatile and a substantial weakening of foreign currencies against the U.S. dollar could reduce our profit margin in various locations outside of the U.S. and adversely impact the comparability of results from period to period. During 2022, we experienced a reduction in revenue and profits as a result of the significant strengthening of the U.S. dollar against foreign currencies. The continued strength of the U.S. dollar could continue to adversely impact our revenue and profit in non-U.S. jurisdictions.

There are other risks that are inherent in our non-U.S. operations, including the potential for changes in socio-economic conditions, laws and regulations, including anti-trust, import, export, labor and environmental laws, and monetary and fiscal policies; the ability to enforce rights, collect revenues and protect assets in foreign jurisdictions; protectionist measures that may prohibit acquisitions or joint ventures, or impact trade volumes; unsettled or unstable political conditions; international conflict; government-imposed plant or other operational shutdowns; backlash from foreign labor organizations related to our restructuring actions; corruption; natural and man-made disasters, hazards and losses; violence, civil and labor unrest, and possible terrorist attacks.

These and other factors may have a material adverse effect on our business and results of operations.

Impacts related to the COVID-19 pandemic could have an adverse effect on our business, financial condition, results of operations and cash flows.

The COVID-19 global pandemic created significant volatility, uncertainty and economic disruption. In response to the challenges presented by COVID-19, we modified our business practices and we may take further actions as may be required by government authorities or that we determine are in the best interests of our employees, customers, partners and suppliers. These actions, may cause us to experience increases in costs, reductions in productivity and disruptions to our business routines.

Vaccine mandates and testing requirements have been implemented in some jurisdictions where we operate. In addition, a number of our customers have issued vaccine requirements with respect to our employees who provide on-site service at customer facilities. Our efforts to comply with these or other mandates could result in increased labor attrition and disruption, as well as difficulty securing future labor needs, and could materially impact our ability to deliver services to our customers, which could in turn adversely impact our results of operations.

We may also experience impacts from market forces and changes in consumer behavior related to pandemic fears as a result of COVID-19. Challenges in achieving sufficient vaccination levels and the introduction of new variants of COVID-19 have and could continue to negatively impact our results of operations due to the extension or reinstitution of lockdowns and similar restrictive measures, limited access to customer sites to perform installation and service work, the delay or abandonment of projects on which we provide products and/or services, and the general adverse impacts on demand and sales volumes from industries that are sensitive to economic downturns and volatility in commodity prices. For example, the Company has experienced, and could continue to experience, disruptions to its business in China due to the application of lockdowns and other restrictive measures under China's "zero-COVID" policy. Further, the COVID-19 pandemic could result in permanent changes in the behaviors of our customers, including the increased prevalence of remote work and a corresponding decline in demand for the construction and maintenance of commercial buildings. Any of these impacts could adversely affect our results of operations.

The extent to which the COVID-19 pandemic continues to impact our results of operations and financial condition will depend on future developments that are highly uncertain and cannot be predicted, including the resurgence of COVID-19 and its variants, the effectiveness of COVID-19 vaccines and the speed at which populations are vaccinated, impacts on economic activity and regulatory actions taken to mitigate the impacts of COVID-19. The impact of COVID-19 may also exacerbate other risks discussed in Item 1A of this Annual Report on Form 10-K.

Risks Related to Our Business Operations

The ability of suppliers to deliver raw materials, parts and components to our manufacturing facilities, and our ability to manufacture and deliver services without disruption, could affect our results of operations.

We use a wide range of materials (primarily steel, copper and aluminum) and components (including semiconductors and other electronic components) in the global production of our products, which come from numerous suppliers around the world. Because not all of our business arrangements provide for guaranteed supply and some key parts may be available only from a single supplier or a limited group of suppliers, we are subject to supply and pricing risk. Our operations and those of our suppliers are subject to disruption for a variety of reasons, including supplier plant shutdowns or slowdowns, transportation delays, work stoppages, labor relations, labor shortages, global geopolitical instability, price inflation, governmental regulatory and enforcement actions, intellectual property claims against suppliers, financial issues such as supplier bankruptcy, information technology failures, and hazards such as fire, earthquakes, flooding, or other natural disasters. For example, we expect to continue to be impacted by the following supply chain issues, due to economic, political and other factors largely beyond our control: increased input material costs and component shortages; supply chain disruptions and delays and cost inflation, all of which could continue or escalate in the future. In addition, some of our subcontractors have also experienced supply chain and labor disruptions, which have continued to impact our ability to timely complete projects and convert our backlog. Such disruptions have and could continue to interrupt our ability to manufacture or obtain certain products and components, thereby adversely impacting our ability to provide products to customers, convert our backlog into revenue and realize expected profit margins. Any significant disruption could materially and adversely affect our business, financial condition, results of operations and cash flows.

Material supply shortages and delays in deliveries, along with other factors such as price inflation, can also result in increased pricing. While many of our customers permit quarterly or other periodic adjustments to pricing based on changes in component prices and other factors, we may bear the risk of price increases that occur between any such repricing or, if such repricing is not permitted, during the balance of the term of the particular customer contract. The inability to timely convert our backlog due to supply chain disruptions subjects us to pricing risk due to cost inflation occurring between the generation of backlog and its conversion into revenue. If we are unable to effectively manage the impacts of price inflation and timely convert our backlog, our results of operations, financial condition and cash flows could materially and adversely be affected.

Our future growth is dependent upon our ability to develop or acquire new products and technologies that achieve market acceptance with acceptable margins.

Our future success depends on our ability to develop or acquire, manufacture and bring competitive, and increasingly complex, products and services to market quickly and cost-effectively. Our ability to develop or acquire new products, services and technologies requires the investment of significant resources. These acquisitions and development efforts divert resources from other potential investments in our businesses, and they may not lead to the development of new technologies, products or services on a timely basis. Moreover, as we introduce new products, we may be unable to detect and correct defects in the design of a product or in its application to a specified use, which could result in loss of sales or delays in market acceptance. Even after introduction, new or enhanced products may not satisfy customer preferences and product failures may cause customers to reject our products. As a result, these products may not achieve market acceptance and our brand image could suffer. We must also attract, develop and retain individuals with the requisite technical expertise and understanding of customers' needs to develop new technologies and introduce new products, particularly as we increase investment in our digital services and solutions business and our OpenBlue software platform. The laws and regulations applicable to our products, and our customers' product and service needs, change from time to time, and regulatory changes may render our products and technologies noncompliant. We must also monitor disruptive technologies and business models. In addition, the markets for our products, services and technologies may not develop or grow as we anticipate. The failure of our technology, products or services to gain market acceptance due to more attractive offerings by our competitors, the introduction of new competitors to the market with new or innovative product offerings or the failure to address any of the above factors could significantly reduce our revenues, increase our operating costs or otherwise materially and adversely affect our business, financial condition, results of operations and cash flows.

Cybersecurity incidents impacting our IT systems and digital products could disrupt business operations, result in the loss of critical and confidential information, and adversely impact our reputation and results of operations.

We rely upon the capacity, reliability and security of our IT and data security infrastructure and our ability to expand and continually update this infrastructure in response to the changing needs of our business. As we implement new systems or integrate existing systems, they may not perform as expected. We also face the challenge of supporting our older systems and implementing necessary upgrades. In addition, we are relying on our IT infrastructure to support our employees' ability to work remotely. If we experience a problem with the functioning of an important IT system as a result of increased burdens placed on our IT infrastructure or a security breach of our IT systems, the resulting disruptions could have an adverse effect on our business.

Global cybersecurity threats and incidents can range from uncoordinated individual attempts to gain unauthorized access to IT systems to sophisticated and targeted measures known as advanced persistent threats directed at the Company, its products, its customers and/or its third-party service providers, including cloud providers. These threats and incidents originate from many sources globally and include malwares that take the form of computer viruses, ransomware, worms, Trojan horses, spyware, adware, scareware, rogue software, and programs that act against the computer user. While we have experienced, and expect to continue to experience, these types of threats and incidents, none of them to date has been material to the Company. Our customers, including the U.S. government, are increasingly requiring cybersecurity protections and mandating cybersecurity standards in our products, and we may incur additional costs to comply with such demands. We seek to deploy comprehensive measures to deter, prevent, detect, respond to and mitigate these threats, including identity and access controls, data protection, vulnerability assessments, product software designs which we believe are less susceptible to cyber-attacks, continuous monitoring of our IT networks and systems, maintenance of backup and protective systems and the incorporation of cybersecurity design throughout the lifecycle of our products. Despite these efforts, cybersecurity incidents, depending on their nature and scope, could potentially result in the misappropriation, destruction, corruption or unavailability of critical data and confidential or proprietary information (our own or that of third parties) and the disruption of business operations. Such incidents could remain undetected for an extended period of time, and the losses arising from such incidents could exceed our available insurance coverage for such matters.

An increasing number of our products, services and technologies, including our OpenBlue software platform, are delivered with digital capabilities and accompanying interconnected device networks, which include sensors, data, building management systems and advanced computing and analytics capabilities. If we are unable to manage the lifecycle cybersecurity risk in development, deployment and operation of our digital platforms and services, they could become susceptible to cybersecurity incidents and lead to third-party claims that our product failures have caused damages to our customers. This risk is enhanced by the increasingly connected nature of our products and the role they play in managing building systems.

The potential consequences of a material cybersecurity incident include financial loss, reputational damage, adverse health, safety, and environmental consequences, exposure to legal claims or enforcement actions, theft of intellectual property, fines levied by the Federal Trade Commission or other governmental organizations, diminution in the value of our investment in research, development and engineering, and increased cybersecurity protection and remediation costs, which in turn could materially and adversely affect our competitiveness and results of operations.

Data privacy, identity protection and information security compliance may require significant resources and presents certain risks.

We collect, store, have access to and otherwise process certain confidential or sensitive data, including proprietary business information, personal data or other information that is subject to privacy and security laws, regulations and/or customer-imposed controls. Despite our efforts to protect such data, our business and our products may be vulnerable to material security breaches, theft, misplaced or lost data, programming errors, or errors that could potentially lead to compromising such data, improper use of our products, systems, software solutions or networks, unauthorized access, use, disclosure, modification or destruction of information, defective products, production downtimes and operational disruptions. A significant actual or perceived risk of theft, loss, fraudulent use or misuse of customer, employee or other data, whether by us, our suppliers, channel partners, customers or other third parties, as a result of employee error or malfeasance, or as a result of the imaging, software, security and other products we incorporate into our products, as well as non-compliance with applicable industry standards or our contractual or other legal obligations or privacy and information security policies regarding such data, could result in costs, fines, litigation or regulatory actions, or could lead customers to select the products and services of our competitors. Any such event could harm our reputation, cause unfavorable publicity or otherwise adversely affect certain potential customers' perception of the security and reliability of our services as well as our credibility and reputation, which could result in lost sales. In addition, we operate in an environment in which there are different and potentially conflicting data privacy laws in effect in the various U.S. states and foreign jurisdictions in which we operate and we must understand and comply with each law and standard in each of these jurisdictions while ensuring the data is secure. For example, proposed regulations restricting the use of biometric security technology could impact the products and solutions offered by our security business. Government enforcement actions can be costly and interrupt the regular operation of our business, and violations of data privacy laws can result in fines, reputational damage and civil lawsuits, any of which may adversely affect our business, reputation and financial statements.

Failure to increase organizational effectiveness through organizational improvements may reduce our profitability or adversely impact our business.

Our results of operations, financial condition and cash flows are dependent upon our ability to drive organizational improvement. We seek to drive improvements through a variety of actions, including integration activities, digital transformation, business portfolio reviews, productivity initiatives, functionalization, executive management changes, and business and operating model assessments. Risks associated with these actions include delays in execution, additional unexpected costs, realization of fewer than estimated productivity improvements, and adverse effects on employee morale. We may not realize the full operational or financial benefits we expect, the recognition of these benefits may be delayed, and these actions may potentially disrupt our operations. In addition, our failure to effectively manage organizational changes may lead to increased attrition and harm our ability to attract and retain key talent.

Infringement or expiration of our intellectual property rights, or allegations that we have infringed upon the intellectual property rights of third parties, could negatively affect us.

We rely on a combination of trademarks, trade secrets, patents, copyrights, know-how, confidentiality provisions and licensing arrangements to establish and protect our proprietary rights. We cannot guarantee, however, that the steps we have taken to protect our intellectual property will be adequate to prevent infringement of our rights or misappropriation or theft of our technology, trade secrets or know-how. For example, effective patent, trademark, copyright and trade secret protection may be unavailable or limited in some of the countries in which we operate. In addition, while we generally enter into confidentiality agreements with our employees and third parties to protect our trade secrets, know-how, business strategy and other proprietary information, such confidentiality agreements could be breached or otherwise may not provide meaningful protection for our trade secrets and know-how related to the design, manufacture or operation of our products. From time to time we resort to litigation to protect our intellectual property rights. Such proceedings can be burdensome and costly, and we may not prevail. Further, adequate remedies may not be available in the event of an unauthorized use or disclosure of our trade secrets and manufacturing expertise. Finally, for those products in our portfolio that rely on patent protection, once a patent has expired, the product is generally open to competition. Products under patent protection usually generate significantly higher revenues than those not protected by patents. If we fail to successfully enforce our intellectual property rights, our competitive position could suffer, which could harm our business, financial condition, results of operations and cash flows.

In addition, we are, from time to time, subject to claims of intellectual property infringement by third parties, including practicing entities and non-practicing entities. Regardless of the merit of such claims, responding to infringement claims can be expensive and time-consuming. The litigation process is subject to inherent uncertainties, and we may not prevail in litigation matters regardless of the merits of our position. Intellectual property lawsuits or claims may become extremely disruptive if the plaintiffs succeed in blocking the trade of our products and services and they may have a material adverse effect on our business, financial condition, results of operations and cash flows.

We rely on our global direct installation channel for a significant portion of our revenue. Failure to maintain and grow the installed base resulting from direct channel sales could adversely affect our business.

Unlike many of our competitors, we rely on a direct sales channel for a substantial portion of our revenue. The direct channel provides for the installation of fire and security solutions, and HVAC equipment manufactured by us. This represents a significant distribution channel for our products, creates a large installed base of our fire and security solutions and HVAC equipment, and creates opportunities for longer term service and monitoring revenue. If we are unable to maintain or grow this installation business, whether due to changes in economic conditions, a failure to anticipate changing customer needs, a failure to introduce innovative or technologically advanced solutions, or for any other reason, our installation revenue could decline, which could in turn adversely impact our product pull-through and our ability to grow service and monitoring revenue.

Our business success depends on attracting and retaining qualified personnel.

Our ability to sustain and grow our business requires us to hire, retain and develop a high-performance, customer-centric and diverse management team and workforce. Continuous efficient and timely customer service, customer support and customer intimacy are essential to enabling customer loyalty and driving our financial results. Our growth strategies require that we pivot to new talent capability investments and build the workforce of the future, with an emphasis on developing skills in digital and consultative, outcome-based selling. Failure to ensure that we have the leadership and talent capacity with the necessary skillset and experience could impede our ability to deliver our growth objectives, execute our strategic plan and effectively transition our leadership. Any unplanned turnover or inability to attract and retain key employees could have a negative effect on our results of operations.

Our ability to convert backlog into revenue requires us to maintain a labor force that is sufficiently large enough to support our manufacturing operations to meet customer demand, as well as provide on-site services and project support for our customers. This includes recruiting, hiring and retaining skilled trade workers to support our direct channel field businesses. Recently, we have experienced the impacts of shortages for both skilled and unskilled labor. While we have taken measures to mitigate the impact of these shortages, we can provide no assurance that such efforts will be successful. The impacts of labor shortages could limit our ability to convert backlog into revenue and negatively impact our results of operations.

A material disruption of our operations, particularly at our monitoring and/or manufacturing facilities, could adversely affect our business.

If our operations, particularly at our monitoring facilities and/or manufacturing facilities, were to be disrupted as a result of significant equipment failures, natural disasters, climate change, cybersecurity breaches, power outages, fires, explosions, terrorism, sabotage, adverse weather conditions, public health crises (including COVID-19 related shutdowns), labor disputes, labor shortages or other reasons, we may be unable to effectively respond to alarm signals, fill customer orders, convert our backlog and otherwise meet obligations to or demand from our customers, which could adversely affect our financial performance. For example, during the COVID-19 pandemic, we experienced disruptions in certain of our manufacturing facilities resulting from government-mandated shutdowns and labor shortages. The continuation or recurrence of either of these trends could adversely affect our financial performance.

Interruptions to production could increase our costs and reduce our sales. Any interruption in production capability could require us to make substantial capital expenditures or purchase alternative material at higher costs to fill customer orders, which could negatively affect our profitability and financial condition. We maintain property damage insurance that we believe to be adequate to provide for reconstruction of facilities and equipment, as well as business interruption insurance to mitigate losses resulting from significant production interruption or shutdown caused by an insured loss. However, any recovery under our insurance policies may not offset the lost sales or increased costs that may be experienced during the disruption of operations, which could adversely affect our business, financial condition, results of operations and cash flows.

Our business may be adversely affected by work stoppages, union negotiations, labor disputes and other matters associated with our labor force.

We employ approximately 102,000 people worldwide. Approximately 22% of these employees are covered by collective bargaining agreements or works councils. Although we believe that our relations with the labor unions and works councils that represent our employees are generally good and we have experienced no material strikes or work stoppages recently, no assurances can be made that we will not experience in the future these and other types of conflicts with labor unions, works councils, other groups representing employees or our employees generally, or that any future negotiations with our labor unions will not result in significant increases in our cost of labor. Additionally, a work stoppage at one of our suppliers could materially and adversely affect our operations if an alternative source of supply were not readily available. Work stoppages by employees of our customers could also result in reduced demand for our products.

Risks Related to Government Regulations

Our businesses operate in regulated industries and are subject to a variety of complex and continually changing laws and regulations.

Our operations and employees are subject to various U.S. federal, state and local licensing laws, codes and standards and similar foreign laws, codes, standards and regulations. Changes in laws or regulations could require us to change the way we operate or to utilize resources to maintain compliance, which could increase costs or otherwise disrupt operations. In addition, failure to comply with any applicable laws or regulations could result in substantial fines or revocation of our operating permits and licenses. Competition or other regulatory investigations can continue for several years, be costly to defend and can result in substantial fines. If laws and regulations were to change or if we or our products failed to comply, our business, financial condition and results of operations could be adversely affected.

Due to the international scope of our operations, the system of laws and regulations to which we are subject is complex and includes regulations issued by the U.S. Customs and Border Protection, the U.S. Department of Commerce's Bureau of Industry and Security, the U.S. Treasury Department's Office of Foreign Assets Control and various non U.S. governmental agencies, including applicable export controls, anti-trust, customs, currency exchange control and transfer pricing regulations, laws regulating the foreign ownership of assets, and laws governing certain materials that may be in our products. No assurances can be made that we will continue to be found to be operating in compliance with, or be able to detect violations of, any such laws or regulations.

Existing free trade laws and regulations, provide certain beneficial duties and tariffs for qualifying imports and exports, subject to compliance with the applicable classification and other requirements. Changes in laws or policies governing the terms of foreign trade, and in particular increased trade restrictions, tariffs or taxes on imports from countries where we manufacture products or from where we import products or raw materials (either directly or through our suppliers) could have an impact on our competitive position, business and financial results. For example, the U.S., China and other countries continue to implement restrictive trade actions, including tariffs, export controls, sanctions, legislation favoring domestic investment and other actions impacting the import and export of goods, foreign investment and foreign operations in jurisdictions in which we operate. Additional measures imposed by such countries on a broader range of imports or economic activity, or retaliatory trade measures taken by other countries in response, could increase the cost of our products, create disruptions to our supply chain and impair our ability to effectively operate and compete in such countries.

We are also subject to a complex network of tax laws and tax treaties that impact our effective tax rate. For more information on risks related to tax regulation, see “Risks Related to Tax Matters” below.

We cannot predict the nature, scope or effect of future regulatory requirements to which our operations might be subject or the manner in which existing laws might be administered or interpreted.

Global climate change and related regulations could negatively affect our business.

The effects of climate change create financial risks to our business. For example, the effects of climate change could disrupt our operations by impacting the availability and cost of materials needed for manufacturing, exacerbate existing risks to our supply chain and increase insurance and other operating costs. These factors may impact our decisions to construct new facilities or maintain existing facilities in areas most prone to physical climate risks. We could also face indirect financial risks passed through the supply chain and disruptions that could result in increased prices for our products and the resources needed to produce them.

Increased public awareness and concern regarding global climate change has resulted in more regulations designed to reduce greenhouse gas emissions. These regulations tend to be implemented under global, national and sub-national climate objectives or policies, and target the global warming potential (“GWP”) of refrigerants, equipment energy efficiency, and the combustion of fossil fuels as a heating source. Many of our products consume energy and use refrigerants. Regulations which seek to reduce greenhouse gas emissions present a risk to our global products business, predominantly our HVAC business, if we do not adequately prepare our product portfolio. As a result, we may be required to make increased research and development and other capital expenditures to improve our product portfolio in order to meet new regulations and standards. Further, our customers and the markets we serve may impose emissions or other environmental standards through regulation, market-based emissions policies or consumer preference that we may not be able to timely meet due to the required level of capital investment or technological advancement. While we have been committed to continuous improvements to our product portfolio to meet and exceed anticipated regulations and preferences, there can be no assurance that our commitments will be successful, that our products will be accepted by the market, that proposed regulation or deregulation will not have a negative competitive impact or that economic returns will reflect our investments in new product development.

We are subject to emerging and competing climate regulations. There continues to be a lack of consistent climate legislation, which creates economic and regulatory uncertainty. Such regulatory uncertainty extends to incentives, which if discontinued, could adversely impact the demand for energy efficient buildings, and could increase costs of compliance. These factors may impact the demand for our products, obsolescence of our products and our results of operations.

As of the date of this filing, we have made several public commitments regarding our intended reduction of carbon emissions, including commitments to achieve net zero carbon emissions by 2040 and the establishment of science-based targets to reduce carbon emissions from our operations and the operations of our customers. Although we intend to meet these commitments, we may be required to expend significant resources to do so, which could increase our operational costs. Further, there can be no assurance of the extent to which any of our commitments will be achieved, or that any future investments we make in furtherance of achieving such targets and goals will meet investor expectations or any binding or non-binding legal standards regarding sustainability performance. Moreover, we may determine that it is in the best interest of our company and our shareholders to prioritize other business, social, governance or sustainable investments over the achievement of our current commitments based on economic, regulatory and social factors, business strategy or pressure from investors, activist groups or other stakeholders. If we are unable to meet these commitments, then we could incur adverse publicity and reaction from investors, activist groups and other stakeholders, which could adversely impact the perception of our brand and our products and services by current and potential customers, as well as investors, which could in turn adversely impact our results of operations.

We are subject to requirements relating to environmental and safety regulations and environmental remediation matters which could adversely affect our business, results of operation and reputation.

We are subject to numerous federal, state and local environmental laws and regulations governing, among other things, solid and hazardous waste storage, treatment and disposal, and remediation of releases of hazardous materials. There are significant capital, operating and other costs associated with compliance with these environmental laws and regulations. Environmental laws and regulations may become more stringent in the future, which could increase costs of compliance or require us to manufacture with alternative technologies and materials. For example, proposed federal, state and European Union legislative action concerning the use and clean-up of fire-fighting foam products, including the United States Environmental Protection Agency’s proposal to designate perfluorooctane sulfonate ("PFOS") and perfluorooctanoic acid ("PFOA") as hazardous substances under the Comprehensive Environmental Response, Compensation, and Liability Act, could negatively impact our fire-fighting business and our results of operations, thereby enhancing the risks to our business described under “Potential liability for environmental contamination could result in substantial costs” below.

Federal, state and local authorities also regulate a variety of matters, including, but not limited to, health, safety laws governing employee injuries, and permitting requirements in addition to the environmental matters discussed above. If we are unable to adequately comply with applicable health and safety regulations and provide our employees with a safe working environment, we may be subject to litigation and regulatory action, in addition to negatively impacting our ability to attract and retain talented employees. New legislation and regulations may require us to make material changes to our operations, resulting in significant increases to the cost of production. Additionally, violations of environmental, health and safety laws are subject to civil, and, in some cases, criminal sanctions. As a result of these various uncertainties, we may incur unexpected interruptions to operations, fines, penalties or other reductions in income which could adversely impact our business, financial condition and results of operations.

We could be adversely affected by violations of the U.S. Foreign Corrupt Practices Act, the U.K. Bribery Act and similar anti-bribery laws around the world.

The U.S. Foreign Corrupt Practices Act (the "FCPA"), the U.K. Bribery Act and similar anti-bribery laws in other jurisdictions generally prohibit companies and their intermediaries from making improper payments to government officials or other persons for the purpose of obtaining or retaining business. Our policies mandate compliance with these anti-bribery laws. We operate in many parts of the world that are recognized as having governmental and commercial corruption and local customs and practices that can be inconsistent with anti-bribery laws. We cannot assure you that our internal control policies and procedures will preclude reckless or criminal acts committed by our employees or third-party intermediaries. In the event that we believe or have reason to believe that our employees or agents have or may have violated applicable anti-corruption laws, or if we are subject to allegations of any such violations, we will investigate the allegations and may engage outside counsel to investigate the relevant facts and circumstances, which can be expensive and require significant time and attention from senior management. Violations of these laws may result in criminal or civil sanctions, which could disrupt our business and result in a material adverse effect on our reputation, business, financial condition, results of operations and cash flows. In addition, we could be subject to commercial impacts such as lost revenue from customers who decline to do business with us as a result of such compliance matters, which also could have a material adverse effect on our reputation, business, financial condition, results of operations and cash flows.

We are subject to risks arising from regulations applicable to companies doing business with the U.S. government.

Our customers include many U.S. federal, state and local government authorities. Doing business with the U.S. federal, state and local governments subjects us to certain particular risks, including dependence on the level of government spending and compliance with and changes in governmental procurement and security regulations. Agreements relating to the sale of products to government entities may be subject to termination, reduction or modification, either at the convenience of the government or for failure to perform under the applicable contract. We are subject to potential government investigations of business practices and compliance with government procurement and security regulations, which can be expensive and burdensome. If we were charged with wrongdoing as a result of an investigation, we could be suspended from bidding on or receiving awards of new government contracts, which could have a material adverse effect on our results of operations. In addition, various U.S. federal and state legislative proposals have been made in the past that would deny governmental contracts to U.S. companies that have moved their corporate location abroad. We are unable to predict the likelihood that, or final form in which, any such proposed legislation might become law, the nature of regulations that may be promulgated under any future legislative enactments, or the effect such enactments and increased regulatory scrutiny may have on our business.

Risks Related to Litigation

Potential liability for environmental contamination could result in substantial costs.

We have projects underway at multiple current and former manufacturing and testing facilities to investigate and remediate environmental contamination resulting from past operations by us or by other businesses that previously owned or used the properties, including our Fire Technology Center and Stanton Street manufacturing facility located in Marinette, Wisconsin. These projects relate to a variety of activities, including arsenic, solvent, oil, metal, lead, PFOS, PFOA and/or other per- and polyfluorinated substances ("PFAS") and other hazardous substance contamination cleanup; and structure decontamination and demolition, including asbestos abatement. Because of uncertainties associated with environmental regulation and environmental remediation activities at sites where we may be liable, future expenses that we may incur to remediate identified sites and resolve outstanding litigation could be considerably higher than the current accrued liability on our consolidated statements of financial position, which could have a material adverse effect on our business, results of operations and cash flows.

In addition, we have been named, along with others, in a number of class action and other lawsuits relating to the use of fire-fighting foam products by the U.S. Department of Defense, the U.S. military and others for fire suppression purposes and related training exercises. It is difficult to predict the outcome or ultimate financial exposure, if any, represented by these matters, and there can be no assurance that any such exposure will not be material. Such claims may also negatively affect our reputation. See Note 21, “Commitments and Contingencies,” of the notes to consolidated financial statements for additional information on these matters.

We are party to asbestos-related product litigation that could adversely affect our financial condition, results of operations and cash flows.

We and certain of our subsidiaries, along with numerous other third parties, are named as defendants in personal injury lawsuits based on alleged exposure to asbestos containing materials. These cases typically involve product liability claims based primarily on allegations of manufacture, sale or distribution of industrial products that either contained asbestos or were used with asbestos containing components. We cannot predict with certainty the extent to which we will be successful in litigating or otherwise resolving lawsuits on satisfactory terms in the future and we continue to evaluate different strategies related to asbestos claims filed against us including entity restructuring and judicial relief. Unfavorable rulings, judgments or settlement terms could have a material adverse impact on our business and financial condition, results of operations and cash flows. See Note 21, "Commitments and Contingencies," of the notes to consolidated financial statements for additional information on these matters.

Legal proceedings in which we are, or may be, a party may adversely affect us.

We are currently, and may in the future, become subject to legal proceedings and commercial or contractual disputes. These are typically claims that arise in the normal course of business including, without limitation, commercial or contractual disputes with our suppliers or customers, intellectual property matters, third party liability, including product liability claims, and employment claims. In addition, we may be exposed to greater risks of liability for employee acts or omissions, or system failure, in our fire and security businesses than may not be inherent in other businesses. In particular, because many of our fire and security products and services are intended to protect lives and real and personal property, we may have greater exposure to litigation risks than other businesses. The nature of the services we provide exposes us to the risks that we may be held liable for employee acts or omissions or system failures. As a result, such employee acts or omissions or system failures could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Risks Relating to Strategic Transactions

We may be unable to successfully execute or effectively integrate acquisitions or joint ventures.

We expect acquisitions of businesses and assets, as well as joint ventures (or other strategic arrangements), to play a role in our future growth and our ability to build capabilities in our products and services. We cannot be certain that we will be able to identify attractive acquisition or joint venture targets, obtain financing for acquisitions on satisfactory terms, successfully acquire identified targets or form joint ventures, or manage the timing of acquisitions with capital obligations across our businesses.

Acquisitions and investments may involve significant cash expenditures, debt incurrences, equity issuances, operating losses and expenses. Acquisitions and investments may be dilutive to earnings. Acquisitions involve numerous other risks, including: the diversion of management attention to integration matters; difficulties in integrating operations and systems; challenges in conforming standards, controls, procedures and accounting and other policies, business cultures and compensation structures; difficulties in assimilating employees and in attracting and retaining key personnel; challenges in successfully integrating and operating businesses with different characteristics than our current core businesses; challenges in keeping existing customers and obtaining new customers; difficulties in achieving anticipated cost savings, synergies, business opportunities and growth prospects; contingent liabilities (including contingent tax liabilities and earn-out obligations) that are larger than expected; and potential unknown liabilities, adverse consequences and unforeseen increased expenses associated with acquired companies.

The goodwill and intangible assets recorded with past acquisitions were significant and impairment of such assets could result in a material adverse impact on our financial condition and results of operations. Competition for acquisition opportunities may rise, thereby increasing our costs of making acquisitions or causing us to refrain from making further acquisitions.

Many of these factors are outside of our control, and any one of them could result in increased costs, decreased expected revenues and diversion of management time and energy, which could materially and adversely impact our business, financial condition and results of operations.

Risks associated with joint venture investments may adversely affect our business and financial results.

We have entered into several joint ventures and we may enter into additional joint ventures in the future. Our joint venture partners may at any time have economic, business or legal interests or goals that are inconsistent with our goals or with the goals of the joint venture. In addition, we may compete against our joint venture partners in certain of our other markets. Disagreements with our business partners may impede our ability to maximize the benefits of our partnerships. Our joint venture arrangements may require us, among other matters, to pay certain costs or to make certain capital investments or to seek our joint venture partner's consent to take certain actions. In addition, our joint venture partners may be unable or unwilling to meet their economic or other obligations under the operative documents, and we may be required to either fulfill those obligations alone to ensure the ongoing success of a joint venture or to dissolve and liquidate a joint venture. These risks could result in a material adverse effect on our business and financial results.

Divestitures of some of our businesses or product lines may materially adversely affect our financial condition, results of operations or cash flows.

We continually evaluate the performance and strategic fit of all of our businesses and may sell businesses or product lines. Divestitures involve risks, including difficulties in the separation of operations, services, products and personnel, the diversion of management's attention from other business concerns, the disruption of our business, the potential loss of key employees and the retention of uncertain environmental or other contingent liabilities related to the divested business. Some divestitures may be dilutive to earnings. In addition, divestitures may result in significant asset impairment charges, including those related to goodwill and other intangible assets, which could have a material adverse effect on our financial condition and results of operations. In the event we are unable to successfully divest a business or product line, we may be forced to wind down such business or product line, which could materially and adversely affect our results of operations and financial condition. We cannot assure you that we will be successful in managing these or any other significant risks that we encounter in divesting a business or product line, and any divestiture we undertake could materially and adversely affect our business, financial condition, results of operations and cash flows, and may also result in a diversion of management attention, operational difficulties and losses.

Risks Related to Tax Matters

Future potential changes to the tax laws could adversely affect us and our affiliates.

Legislative and regulatory action may be taken in the U.S. and other jurisdictions in which we operate, which, if ultimately enacted, could override tax treaties upon which we rely, or broaden the circumstances under which we would be considered a U.S. resident, each of which could materially and adversely affect our effective tax rate. We cannot predict the outcome of any specific legislative or regulatory proposals and such changes could have a prospective or retroactive application. However, if proposals were enacted that had the effect of disregarding our incorporation in Ireland or limiting Johnson Controls International plc’s ability, as an Irish company, to take advantage of tax treaties with the U.S., we could be subject to increased taxation, potentially significant expense, and/or other adverse tax consequences.

The U.S. enacted the Inflation Reduction Act of 2022 (“IRA”) in August 2022, which, among other sections, creates a new book minimum tax of at least 15% of consolidated GAAP pre-tax income for corporations with average book income in excess of $1 billion. The book minimum tax will first apply to us in fiscal 2024. We do not expect the IRA to have a material impact on our effective tax rate, however, it is possible that the U.S. Congress could advance other tax legislation proposals in the future that could have a material impact on our tax rate. In addition, in October 2021, 136 out of 140 countries in the Organization for Economic Co-operation and Development ("OECD") Inclusive Framework on Base Erosion and Profit Shifting ("IF"), including Ireland, politically committed to potentially fundamental changes to the international corporate tax system, including the potential implementation of a global minimum corporate tax rate. While the details of these pronouncements remain unclear and timing of implementation uncertain, the impact of local country IF adoption could have a material impact on our effective tax rate. It is also possible that jurisdictions in which we do business could react to such IF developments unilaterally by enacting tax legislation that could adversely affect us or our affiliates. There is also general uncertainty regarding the tax policies of the jurisdictions where we operate, and if changes are enacted, there could be a resulting increase in our effective tax rate.

The Internal Revenue Service ("IRS") may not agree that we should be treated as a non-U.S. corporation for U.S. federal tax purposes.

Under current U.S. federal tax law, a corporation is generally considered to be a tax resident in the jurisdiction of its organization or incorporation. Because Johnson Controls International plc is an Irish incorporated entity, it would generally be classified as a non-U.S. corporation (and, therefore, a non-U.S. tax resident) under these rules. However, Section 7874 of the Code ("Section 7874") provides an exception to this general rule under which a non-U.S. incorporated entity may, in certain circumstances, be treated as a U.S. corporation for U.S. federal tax purposes.

Under Section 7874, if (1) former Johnson Controls, Inc. shareholders owned (within the meaning of Section 7874) 80% or more (by vote or value) of our ordinary shares after the Merger by reason of holding Johnson Controls, Inc. common stock (such ownership percentage the "Section 7874 ownership percentage"), and (2) our "expanded affiliated group" did not have "substantial business activities" in Ireland ("the substantial business activities test"), we will be treated as a U.S. corporation for U.S. federal tax purposes. If the Section 7874 ownership percentage of the former Johnson Controls, Inc. shareholders after the Merger was less than 80% but at least 60%, and the substantial business activities test was not met, we and our U.S. affiliates (including the U.S. affiliates historically owned by Tyco) may, in some circumstances, be subject to certain adverse U.S. federal income tax rules (which, among other things, could limit their ability to utilize certain U.S. tax attributes to offset U.S. taxable income or gain resulting from certain transactions). The application of these rules could result in significant additional U.S. tax liability and limit our ability to restructure or access cash earned by certain of our non-U.S. subsidiaries, in each case, without incurring substantial U.S. tax liabilities.

Based on the terms of the Merger, the rules for determining share ownership under Section 7874 and certain factual assumptions, we believe that former Johnson Controls, Inc. shareholders owned (within the meaning of Section 7874) less than 60% (by both vote and value) of our ordinary shares after the Merger by reason of holding shares of Johnson Controls, Inc. common stock. Therefore, under current law, we believe that we should not be treated as a U.S. corporation for U.S. federal tax purposes and that Section 7874 should otherwise not apply to us or our affiliates as a result of the Merger.

However, the determination of the Section 7874 ownership percentage is complex and is subject to factual and legal uncertainties. Thus, there can be no assurance that the IRS will agree with the position that we should not be treated as a U.S. corporation for U.S. federal tax purposes or that Section 7874 does not otherwise apply as a result of the Merger.

Regardless of any application of Section 7874, we are treated as an Irish tax resident for Irish tax purposes. Consequently, if we were to be treated as a U.S. corporation for U.S. federal tax purposes under Section 7874, we could be liable for both U.S. and Irish taxes, which could have a material adverse effect on our financial condition and results of operations.

Changes to the U.S. model income tax treaty could adversely affect us.

On February 17, 2016, the U.S. Treasury released a revised U.S. model income tax convention (the "new model"), which is the baseline text used by the U.S. Treasury to negotiate tax treaties. If any or all of the modifications to the model treaty are adopted in the main jurisdictions in which we do business, they could, among other things, cause double taxation, increase audit risk and substantially increase our worldwide tax liability. We cannot predict the outcome of any specific modifications to the model treaty, and we cannot provide assurance that any such modifications will not apply to us.

Negative or unexpected tax consequences could adversely affect our results of operations.

Adverse changes in the underlying profitability and financial outlook of our operations in several jurisdictions could lead to additional changes in our valuation allowances against deferred tax assets and other tax reserves on our statement of financial position, and the future sale of certain businesses could potentially result in the reversal of outside basis differences that could adversely affect our results of operations and cash flows. Additionally, changes in tax laws in the U.S., Ireland or in other countries where we have significant operations could materially affect deferred tax assets and liabilities on our consolidated statements of financial position and our income tax provision in our consolidated statements of income.

We are also subject to tax audits by governmental authorities. Negative unexpected results from one or more such tax audits could adversely affect our results of operations.

<u>Risks Relating to Our Jurisdiction of Incorporation</u>

Irish law differs from the laws in effect in the U.S. and may afford less protection to holders of our securities.

It may not be possible to enforce court judgments obtained in the U.S. against us in Ireland based on the civil liability provisions of the U.S. federal or state securities laws. In addition, there is some uncertainty as to whether the courts of Ireland would recognize or enforce judgments of U.S. courts obtained against us or our directors or officers based on the civil liabilities provisions of the U.S. federal or state securities laws or hear actions against us or those persons based on those laws. We have been advised that the U.S. currently does not have a treaty with Ireland providing for the reciprocal recognition and enforcement of judgments in civil and commercial matters. Therefore, a final judgment for the payment of money rendered by any U.S. federal or state court based on civil liability, whether or not based solely on U.S. federal or state securities laws, would not automatically be enforceable in Ireland.

As an Irish company, Johnson Controls is governed by the Irish Companies Acts, which differ in some material respects from laws generally applicable to U.S. corporations and shareholders, including, among others, differences relating to interested director and officer transactions and shareholder lawsuits. Likewise, the duties of directors and officers of an Irish company generally are owed to the company only. Shareholders of Irish companies generally do not have a personal right of action against directors or officers of the company and may exercise such rights of action on behalf of the company only in limited circumstances. Accordingly, holders of Johnson Controls International plc securities may have more difficulty protecting their interests than would holders of securities of a corporation incorporated in a jurisdiction of the U.S.

Transfers of Johnson Controls ordinary shares may be subject to Irish stamp duty.

For the majority of transfers of Johnson Controls ordinary shares, there is no Irish stamp duty. However, Irish stamp duty is payable for certain share transfers. A transfer of Johnson Controls ordinary shares from a seller who holds shares beneficially (i.e., through the Depository Trust Company ("DTC")) to a buyer who holds the acquired shares beneficially is not subject to Irish stamp duty (unless the transfer involves a change in the nominee that is the record holder of the transferred shares). A transfer of Johnson Controls ordinary shares by a seller who holds shares directly (i.e., not through DTC) to any buyer, or by a seller who holds the shares beneficially to a buyer who holds the acquired shares directly, may be subject to Irish stamp duty (currently at the rate of 1% of the price paid or the market value of the shares acquired, if higher) payable by the buyer. A shareholder who directly holds shares may transfer those shares into his or her own broker account to be held through DTC without giving rise to Irish stamp duty provided that the shareholder has confirmed to Johnson Controls transfer agent that there is no change in the ultimate beneficial ownership of the shares as a result of the transfer and, at the time of the transfer, there is no agreement in place for a sale of the shares.

We currently intend to pay, or cause one of our affiliates to pay, stamp duty in connection with share transfers made in the ordinary course of trading by a seller who holds shares directly to a buyer who holds the acquired shares beneficially. In other cases, Johnson Controls may, in its absolute discretion, pay or cause one of its affiliates to pay any stamp duty. Johnson Controls Memorandum and Articles of Association provide that, in the event of any such payment, Johnson Controls (i) may seek reimbursement from the buyer, (ii) may have a lien against the Johnson Controls ordinary shares acquired by such buyer and any dividends paid on such shares and (iii) may set-off the amount of the stamp duty against future dividends on such shares. Parties to a share transfer may assume that any stamp duty arising in respect of a transaction in Johnson Controls ordinary shares has been paid unless one or both of such parties is otherwise notified by Johnson Controls.

Dividends paid by us may be subject to Irish dividend withholding tax.

In certain circumstances, as an Irish tax resident company, we will be required to deduct Irish dividend withholding tax (currently at the rate of 25%) from dividends paid to our shareholders. Shareholders that are residents in the U.S., European Union countries (other than Ireland) or other countries with which Ireland has signed a tax treaty (whether the treaty has been ratified or not) generally should not be subject to Irish withholding tax so long as the shareholder has provided certain Irish dividend withholding tax forms. However, some shareholders may be subject to withholding tax, which could adversely affect the price of our ordinary shares.

Dividends received by you could be subject to Irish income tax.

Dividends paid in respect of Johnson Controls ordinary shares generally are not subject to Irish income tax where the beneficial owner of these dividends is exempt from dividend withholding tax, unless the beneficial owner of the dividend has some connection with Ireland other than his or her shareholding in Johnson Controls.

Johnson Controls shareholders who receive their dividends subject to Irish dividend withholding tax generally will have no further liability to Irish income tax on the dividend unless the beneficial owner of the dividend has some connection with Ireland other than his or her shareholding in Johnson Controls.

General Risk Factors

The potential insolvency or financial distress of third parties could adversely impact our business and results of operations.

We are exposed to the risk that third parties to various arrangements who owe us money or goods and services, or who purchase goods and services from us, will not be able to perform their obligations or continue to place orders due to insolvency or financial distress. If third parties fail to perform their obligations under arrangements with us, we may be forced to replace the underlying commitment at current or above market prices or on other terms that are less favorable to us. In such events, we may incur losses, or our results of operations, financial condition or liquidity could otherwise be adversely affected.

Risks related to our defined benefit retirement plans may adversely impact our results of operations and cash flow.

Significant changes in actual investment return on defined benefit plan assets, discount rates, mortality assumptions and other factors could adversely affect our results of operations and the amounts of contributions we must make to our defined benefit plans in future periods. Because we mark-to-market our defined benefit plan assets and liabilities on an annual basis, large non-cash gains or losses could be recorded in the fourth quarter of each fiscal year or when a remeasurement event occurs. Generally accepted accounting principles in the U.S. require that we calculate income or expense for the plans using actuarial valuations. These valuations reflect assumptions about financial markets and interest rates, which may change based on economic conditions. Funding requirements for our defined benefit plans are dependent upon, among other factors, interest rates, underlying asset returns and the impact of legislative or regulatory changes related to defined benefit funding obligations.

A downgrade in the ratings of our debt could restrict our ability to access the debt capital markets and increase our interest costs.

Unfavorable changes in the ratings that rating agencies assign to our debt may ultimately negatively impact our access to the debt capital markets and increase the costs we incur to borrow funds in the market or under our existing credit agreements. If ratings for our debt fall below investment grade, our access to the debt capital markets would become restricted and the price we pay to issue debt could increase. Historically, we have relied on our ability to issue commercial paper rather than to draw on our credit facility to support our daily operations, which means that a downgrade in our ratings or volatility in the financial markets causing limitations to the debt capital markets could have an adverse effect on our business or our ability to meet our liquidity needs.

Further, an increase in the level of our indebtedness may increase our vulnerability to adverse general economic and industry conditions and may affect our ability to obtain additional financing.

A variety of other factors could adversely affect the results of operations of our business.

Any of the following could materially and adversely impact the results of operations of our business: loss of, changes in, or failure to perform under guaranteed performance contracts with our major customers; cancellation of, or significant delays in, projects in our backlog; delays or difficulties in new product development; our ability to recognize the expected benefits of our restructuring actions, products and services that we are unable to pass on to the market; changes in energy costs or governmental regulations that would decrease the incentive for customers to update or improve their building control systems; and natural or man-made disasters or losses that impact our ability to deliver products and services to our customers.

ITEM 1B UNRESOLVED STAFF COMMENTS

The Company has no unresolved written comments regarding its periodic or current reports from the staff of the SEC.

ITEM 2 PROPERTIES

The Company has properties in over 60 countries throughout the world, with its world headquarters located in Cork, Ireland and its North American operational headquarters located in Milwaukee, Wisconsin USA. The Company's wholly- and majority-owned facilities primarily consist of manufacturing, sales and service offices, research and development facilities, monitoring centers, and assembly and/or warehouse centers. At September 30, 2022, these properties totaled approximately 40 million square feet of floor space of which 12 million square feet are owned and 28 million square feet are leased. The Company considers its facilities to be suitable for their current uses and adequate for current needs. The majority of the facilities are operating at normal levels based on capacity. The Company does not anticipate difficulty in renewing existing leases as they expire or in finding alternative facilities.

ITEM 3 LEGAL PROCEEDINGS

Gumm v. Molinaroli, et al.

On August 16, 2016, a putative class action lawsuit, Gumm v. Molinaroli, et al., Case No. 16-cv-1093, was filed in the United States District Court for the Eastern District of Wisconsin, naming Johnson Controls, Inc., the individual members of its board of directors at the time of the merger with the Company's merger subsidiary and certain of its officers, the Company and the Company's merger subsidiary as defendants. The complaint asserted various causes of action under the federal securities laws, state law and the Taxpayer Bill of Rights, including that the individual defendants allegedly breached their fiduciary duties and unjustly enriched themselves by structuring the merger among the Company, Tyco and the merger subsidiary in a manner that would result in a United States federal income tax realization event for the putative class of certain Johnson Controls, Inc. shareholders and allegedly result in certain benefits to the defendants, as well as related claims regarding alleged misstatements in the proxy statement/prospectus distributed to the Johnson Controls, Inc. shareholders, conversion and breach of contract. The complaint also asserted that Johnson Controls, Inc., the Company and the Company's merger subsidiary aided and abetted the individual defendants in their breach of fiduciary duties and unjust enrichment. The complaint seeks, among other things, disgorgement of profits and damages. On September 30, 2016, approximately one month after the closing of the merger, plaintiffs filed a preliminary injunction motion seeking, among other items, to compel Johnson Controls, Inc. to make certain intercompany payments that plaintiffs contend will impact the United States federal income tax consequences of the merger to the putative class of certain Johnson Controls, Inc. shareholders and to enjoin Johnson Controls, Inc. from reporting to the Internal Revenue Service the capital gains taxes payable by this putative class as a result of the closing of the merger. The court held a hearing on the preliminary injunction motion on January 4, 2017, and on January 25, 2017, the judge denied the plaintiffs' motion. Plaintiffs filed an amended complaint on February 15, 2017, and the Company filed a motion to dismiss on April 3, 2017. On October 17, 2019, the court heard oral arguments on the motion to dismiss and took the matter under advisement. On November 3, 2021, the court granted the Company's motion to dismiss the amended complaint. Plaintiffs appealed to the United States Court of Appeals for the Seventh Circuit. Briefing and oral argument has been completed. The court has yet to issue a ruling.

Refer to Note 21, "Commitments and Contingencies," of the notes to consolidated financial statements for discussion of environmental, asbestos, insurable liabilities and other litigation matters, which is incorporated by reference herein and is considered an integral part of Part I, Item 3, "Legal Proceedings."

ITEM 4 MINE SAFETY DISCLOSURES

Not applicable.

EXECUTIVE OFFICERS OF THE REGISTRANT

Pursuant to General Instruction G(3) of Form 10-K, the following list of executive officers of the Company as of November 15, 2022 is included as an unnumbered Item in Part I of this report in lieu of being included in the Company's Proxy Statement relating to the annual general meeting of shareholders to be held on March 8, 2023.

Tomas Brannemo, 51, has served as Vice President and President, Building Solutions, Europe, Middle East, Africa and Latin America since September 2019. He previously served as Senior Vice President and President, Water Infrastructure and Europe Commercial Team of Xylem Inc., a leading global water technology company. At Xylem, he also served as Senior Vice President and President, Transport and Treatment, from 2017 to 2019 and other roles from 2010 to 2017. Between 2006 and 2010, he held various marketing, sales and engineering positions at Volvo Construction Company.

Rodney Clark, 53, has served as the Company's Chief Commercial Officer since June 2022. Prior to joining Johnson Controls, Mr. Clark served in various management roles at Microsoft Corporation, a global technology company, including as Corporate Vice President, Global Channel Sales and Channel Chief, from March 2021 to May 2022, Corporate Vice President, IoT and Mixed Reality Sales, from August 2020 to March 2021, Vice President, IoT and Mixed Reality Sales, from 2017 to August 2020, General Manager, IoT from 2013 to 2017 and other positions of increasing responsibility from 1998 through 2013. Mr. Clark also serves as a director on the board of Entegris, Inc., a supplier of advanced materials and process solutions for the semiconductor and other high-technology industries.

John Donofrio, 60, has served as Executive Vice President and General Counsel of the Company since November 2017. He previously served as Vice President, General Counsel and Secretary of Mars, Incorporated, a global food manufacturer from October 2013 to November 2017. Before joining Mars in October 2013, Mr. Donofrio was Executive Vice President, General Counsel and Secretary for The Shaw Group Inc., a global engineering and construction company, from October 2009 until February 2013. Prior to joining Shaw, Mr. Donofrio was Senior Vice President, General Counsel and Chief Compliance Officer at Visteon Corporation, a global automotive supplier, a position he held from 2005 until October 2009. Mr. Donofrio has been a Director of FARO Technologies, Inc., a designer, developer, manufacturer and marketer of software driven, 3D measurement, imaging and realization systems, since 2008.

Michael J. Ellis, 66, has served as Executive Vice President and Chief Customer & Digital Officer since October 2019. From May 2018 to October 2019, he served as a Managing Director at Accenture, a global provider of professional services in strategy, consulting, digital, technology and operations. He previously served as Chairman and CEO of ForgeRock, a global digital security software company, from 2012 to 2018. Prior to joining ForgeRock, from 2008 to 2012, he held various senior executive roles at SAP SE, a global provider of enterprise software solutions. Previously, he also served as Chief Executive Officer of Univa, a leading innovator in enterprise-grade workload management and optimization solutions, and as Senior Vice President Business Development at i2 Technologies, a provider of supply chain solutions. Mr. Ellis also served as a director on the board of CBRE Acquisition Holdings Inc. from 2021 to 2022.

Olivier Leonetti, 57, has served as Chief Financial Officer since November 2020. Prior to joining Johnson Controls, Mr. Leonetti served as the Senior Vice President and Chief Financial Officer of Zebra Technologies, a provider of enterprise-level data capture and automatic identification solutions, a position he had held since November 2016. Prior to joining Zebra, Mr. Leonetti was the Executive Vice President and Chief Financial Officer of Western Digital, a provider of data infrastructure solutions from 2014 to 2016. Prior to joining Western Digital, Mr. Leonetti served as Vice President of Finance – Global Commercial Organization at Amgen, Inc. from 2011 to 2014. From 1997 to 2011, Mr. Leonetti served in various senior finance positions with increasing responsibility at Dell Inc., including most recently as Vice President of Finance. Prior to joining Dell Inc., Mr. Leonetti served in various worldwide finance capacities with Lex Rac Service plc and the Gillette Company. Mr. Leonetti also serves as a director on the board of Eaton Corporation plc, a provider of power management technologies and services.

Nathan Manning, 46, has served as Vice President and President, Building Solutions, North America since October 2020. He previously served as Vice President and General Manager, Field Operations, from March 2020 to October 2020 and Vice President and General Manager, HVAC and Controls Building Solutions North America, from January 2019 to March 2020. Prior to joining Johnson Controls, he served in various roles at General Electric, a diversified industrial and technology company, where he held the position of General Manager, Operational Excellence for General Electric’s GE Power segment from August 2017 until December 2018 and the position of General Manager, Services of GE Energy Connections, a division of GE Power, from November 2015 until August 2017. Prior to joining General Electric, Mr. Manning served as Vice President, General Manager of Eaton Aerospace, a segment of Eaton Corporation plc, a provider of power management technologies and services, from February 2014 until November 2015. Prior to joining Eaton, Mr. Manning served in a number of roles with increasing responsibility in General Electric from his hire in January 2000, including as President and Chief Executive Officer of Aviage Systems, a joint venture between General Electric and Aviation Industry Corporation of China, from July 2012 until February 2014.

Daniel C. “Skip” McConeghy, 56, has served as Vice President, Chief Accounting and Tax Officer since June 2022. Mr. McConeghy previously served as Vice President, Global Tax since October 2020 and as interim Controller since February 2022. He also served as Vice President, Corporate Tax Planning, from July 2012 through October 2020. Prior to joining Johnson Controls, Mr. McConeghy was a Tax Partner at PricewaterhouseCoopers, from July 1999 through June 2012.

George R. Oliver, 63, has served as Chief Executive Officer and Chairman of the Board since September 2017. He previously served as our President and Chief Operating Officer following the completion of the merger of Johnson Controls and Tyco in September 2016. Prior to that, Mr. Oliver was Tyco's Chief Executive Officer, a position he held since September 2012. He joined Tyco in July 2006, and served as President of a number of operating segments from 2007 through 2011. Before joining Tyco, he served in operational leadership roles of increasing responsibility at several General Electric divisions. Mr. Oliver also serves as a director on the board of Raytheon Technologies, an aerospace and defense company.

Ganesh Ramaswamy, 54, has served as Vice President and President, Global Services for Johnson Controls since December 2019. From 2015 to 2019, Mr. Ramaswamy served in various executive leadership roles at Danaher Corporation, a diversified manufacturer of life sciences, diagnostics, and industrial products and services, including Senior Vice President, High Growth markets—Beckman Coulter, President, Videojet Technologies, and, most recently, as Danaher Vice President & Group Executive, Marking & Coding. From 2011 to 2015, Mr. Ramaswamy served in various executive roles at Pentax Medical, a provider of endoscopic imaging devices and solutions, including as President of Pentax Medical from 2013 to 2015. Earlier in his career, Mr. Ramaswamy served in various roles of increasing responsibility with the General Electric Company across product development, service operations, and general management. Mr. Ramaswamy also serves as a director on the board of PACCAR, a global manufacturer of heavy-duty and medium-duty trucks.

Anu Rathninde, 52, has served as Vice President and President, Building Solutions, Asia Pacific since May 2022. Prior to joining Johnson Controls, Mr. Rathninde served as President, Electrical Distribution Systems and Advanced Safety & User Experience, Asia Pacific at Aptiv plc, and mobility architecture company primarily serving the automotive sector, from November 2021 until May 2022 and as President, Electrical Distribution Systems from May 2016 until November 2021. Prior to joining Aptiv, Mr. Rathninde served as Vice President of the Automotive Products Group at Johnson Electric, manufacturer of electric motors, actuators, motion subsystems and related electro-mechanical components. Earlier in his career, Mr. Rathninde held progressive leadership positions at Aptiv in general management, engineering, business development, strategy and business planning.

Lei Zhang Schlitz, 56, was appointed Vice President and President, Global Products, in November 2022. Prior to joining Johnson Controls, Ms. Schlitz served as Executive Vice President, Automotive OEM of Illinois Tool Works Inc. ("ITW"), a global manufacturer of a diversified range of industrial products and equipment, from 2019 until October 2022. Prior to serving as Vice President, Automotive OEM, Ms. Schlitz served in various leadership roles at ITW, including Executive Vice President, ITW Food Equipment Segment, from September 2015 until January 2020, Group President, Global Ware-Wash and Refrigeration Businesses and Food Equipment Asia Pacific, from January 2014 until August 2015, Group President, Worldwide Refrigeration & Weigh Wrap Business, from May 2011 until December 2013 and as Vice President, ITW Technology Center from October 2008 until April 2011. Prior to joining ITW, Ms. Schlitz served in roles of increasing responsibility at Siemens Energy & Automation from September 2001 until September 2008 and General Electric from 1998 until September 2001. Ms. Schlitz serves on the Board of Directors for Archer Daniels Midland Company, a leader in human and animal nutrition and agricultural origination and processing.

Marlon Sullivan, 48, became Executive Vice President and Chief Human Resources Officer in September 2021. Prior to joining Johnson Controls, he served as the Senior Vice President of Human Resources at Delta Airlines from January 2021 to September 2021. Prior to joining Delta, Mr. Sullivan served in various human resources and talent development leadership roles at Abbott Laboratories from December 2007 through December 2020. Earlier in his career, Mr. Sullivan held a variety of human resources roles at The Home Depot.

There are no family relationships, as defined by the instructions to this item, among the Company's executive officers.

PART II

ITEM 5 MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

The shares of the Company's ordinary shares are traded on the New York Stock Exchange under the symbol "JCI."

Title of Class	Number of Record Holders as of October 31, 2022
Ordinary Shares, $0.01 par value	29,935

In March 2021, the Company's Board of Directors approved a $4.0 billion increase to the Company's share repurchase authorization, adding to the $2.0 billion remaining as of December 31, 2020 under the prior share repurchase authorization approved in 2019. The share repurchase authorization does not have an expiration date and may be amended or terminated by the Board of Directors at any time without prior notice. During fiscal 2022, the Company repurchased approximately $1.4 billion of its ordinary shares on an open market. As of September 30, 2022, approximately $3.6 billion remains available under the share repurchase authorization.

The following table presents information regarding the repurchase of the Company's ordinary shares by the Company as part of the publicly announced program during the three months ended September 30, 2022.

Period	Total Number of Shares Purchased	Average Price Paid per Share	Total Number of Shares Purchased as Part of the Publicly Announced Program	Approximate Dollar Value of Shares that May Yet be Purchased under the Programs
7/1/22 - 7/31/22				
Purchases by Company	278,285	$ 48.31	278,285	$ 3,614,400,337
8/1/22 - 8/31/22				
Purchases by Company	—	—	—	—
9/1/22 - 9/30/22				
Purchases by Company	—	—	—	—

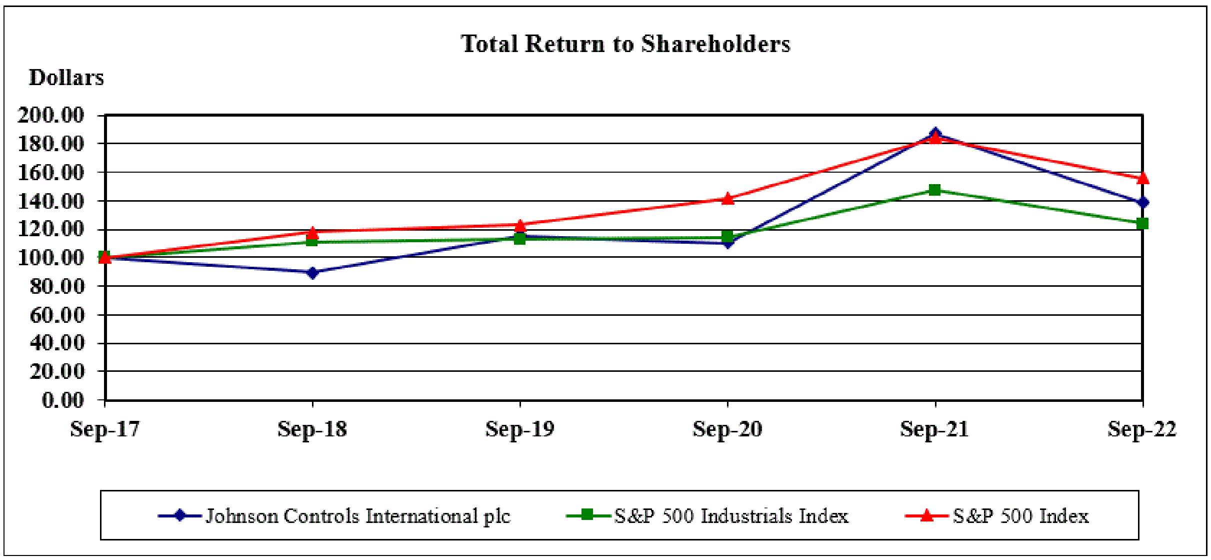
During the three months ended September 30, 2022, acquisitions of shares by the Company from certain employees in order to satisfy employee tax withholding requirements in connection with the vesting of restricted shares were not material.

Equity compensation plan information is incorporated by reference from Part III, Item 12, "Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters," of this document and should be considered an integral part of this Item 5.

The following information in Item 5 is not deemed to be "soliciting material" or to be "filed" with the SEC or subject to Regulation 14A or 14C under the Securities Exchange Act of 1934 ("Exchange Act") or to the liabilities of Section 18 of the Exchange Act, and will not be deemed to be incorporated by reference into any filing under the Securities Act of 1933 or the Exchange Act, except to the extent the Company specifically incorporates it by reference into such a filing.

The line graph below compares the cumulative total shareholder return on the Company's ordinary shares with the cumulative total return of companies on the Standard & Poor's ("S&P's") 500 Stock Index and the companies on the S&P 500 Industrials Index. This graph assumes the investment of $100 on September 30, 2017 and the reinvestment of all dividends since that date.

COMPANY/INDEX	Sep17	Sep18	Sep19	Sep20	Sep21	Sep22
Johnson Controls International plc	100.00	89.39	115.25	110.34	187.22	138.73
S&P 500 Industrials Index	100.00	111.16	112.66	114.12	147.15	123.75
S&P 500 Index	100.00	117.91	122.93	141.55	184.02	155.86



ITEM 6 [RESERVED]

ITEM 7 MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

General

Johnson Controls International plc, headquartered in Cork, Ireland, is a global leader in smart, healthy and sustainable buildings, serving a wide range of customers in more than 150 countries. The Company's products, services, systems and solutions advance the safety, comfort and intelligence of spaces to serve people, places and the planet. The Company is committed to helping its customers win and creating greater value for all of its stakeholders through its strategic focus on buildings.

The Company is a global leader in engineering, manufacturing and commissioning building products and systems, including residential and commercial HVAC equipment, industrial refrigeration systems, controls, security systems, fire-detection systems and fire-suppression solutions. The Company further serves customers by providing technical services, including maintenance, management, repair, retrofit and replacement of equipment (in the HVAC, industrial refrigeration, security and fire-protection space), energy-management consulting and data-driven "smart building" services and solutions. The Company partners with customers by leveraging its broad product portfolio and digital capabilities, including its OpenBlue platform, together with its direct channel service and solutions capabilities, to deliver outcome-based solutions across the lifecycle of a building that address customers' needs to improve energy efficiency, enhance security, create healthy environments and reduce greenhouse gas emissions.

The Company's fiscal year ends on September 30. Unless otherwise stated, references to years in this report relate to fiscal years rather than calendar years. This discussion summarizes the significant factors affecting the consolidated operating results, financial condition and liquidity of the Company for the year ended September 30, 2022. This discussion should be read in conjunction with Item 8, the consolidated financial statements and the notes to consolidated financial statements. A detailed discussion of the 2021 to 2020 year-over-year changes are not included herein and can be found in the Management's Discussion and Analysis section in the Company's 2021 Annual Report on Form 10-K filed November 15, 2021 under the heading "Fiscal year 2021 compared to fiscal year 2020" which is incorporated herein by reference.

Macroeconomic Trends

Much of the demand for installation of the Company's products and solutions is driven by commercial and residential construction and industrial facility expansion and maintenance projects. Commercial and residential construction projects are heavily dependent on general economic conditions, localized demand for commercial and residential real estate and availability of credit. Positive or negative fluctuations in commercial and residential construction, industrial facility expansion and maintenance projects and other capital investments in buildings could have a corresponding impact on the Company's financial condition, results of operations and cash flows.

As a result of the Company's global presence, a significant portion of its revenues and expenses is denominated in currencies other than the U.S. dollar. The Company is therefore subject to non-U.S. currency risks and non-U.S. exchange exposure. While the Company employs financial instruments to hedge some of its transactional foreign exchange exposure, these activities do not insulate it completely from those exposures. In addition, the currency exposure from the translation of non-U.S. dollar functional currency subsidiaries are not able to be hedged. Exchange rates can be volatile and a substantial weakening or strengthening of foreign currencies against the U.S. dollar could increase or reduce the Company's profit margin, respectively, and impact the comparability of results from period to period. During fiscal 2022, revenue and profits were adversely impacted due to the significant strengthening of the U.S. dollar against foreign currencies. The continued strength of the U.S. dollar could continue to adversely impact the Company's results.

The Company continues to observe trends demonstrating increased interest and demand for its products and services that enable smart, safe, efficient and sustainable buildings. This demand is driven in part by government tax incentives, building performance standards and other regulations designed to limit emissions and combat climate change. In particular, legislative and regulatory initiatives such as the U.S. Climate Smart Buildings Imitative, U.S. Inflection Reduction Act and EU Energy Performance of Buildings Directive include provisions designed to fund and encourage investment in decarbonization and digital technologies for buildings. This demand is supplemented by an increase in commitments in both the public and private sectors to reduce emissions and/or achieve net zero emissions. The Company seeks to capitalize on these trends to drive growth by developing and delivering technologies and solutions to create smart, sustainable and healthy buildings. The Company is investing in new digital and product capabilities, including its OpenBlue platform, to enable it to deliver sustainable, high-efficiency products and tailored services to enable customers to achieve their sustainability goals. The Company is leveraging its install base, together with data-driven products and services to offer outcome-based solutions to customers with a focus on generating accelerated growth in services and recurring revenue.

The Company has experienced, and expects to continue to experience, increased input material cost inflation and component shortages, as well as disruptions and delays in its supply chain, as a result of global macroeconomic trends, including increased global demand, the conflict between Russia and Ukraine, government-mandated actions in response to COVID-19, particularly in China, and labor shortages. Actions taken by the Company to mitigate supply chain disruptions and inflation, including expanding and redistributing its supplier network, supplier financing, price increases and productivity improvements, have generally been successful in offsetting some, but not all, of the impact of these trends. The collective impact of these trends has been to positively impact revenue due to increased demand and price increases to offset inflation, while negatively impacting margins due to supply chain disruptions and cost pressures. The Company has also experienced delays in converting its backlog due to continued supply chain disruptions, negatively impacting both revenues and margins. Although the Company has experienced recent improvement in its supply chain, the Company expects that these trends will continue to impact its results into fiscal 2023. Therefore, the Company could experience further disruptions, shortages and cost increases in the future, the effect of which will depend on the Company's ability to successfully mitigate and offset the impact of these events.

During the second quarter of fiscal 2022, the Company suspended its operations in Russia in response to the conflict between Russia and Ukraine. Although this decision has not had and is not expected to have a material impact on the Company's operating results, the broader consequences of this conflict, including heightened supply chain disruption, inflation, economic instability and other factors have and could continue to adversely impact the Company's results of operations.

Impact of COVID-19 Pandemic

The COVID-19 pandemic continues to impact aspects of the Company's operations and results. During fiscal 2022, the Company's facilities generally operated at normal levels, however, the Company has experienced some disruptions to its business in China due to government-mandated lockdowns in several major cities.

The Company has experienced increases in demand as governments have distributed vaccines and lifted COVID-19-related restrictions, leading to increases in retrofit activity and commercial building construction. As a result of the pandemic, the Company has seen an increase in demand for its products and solutions that promote building health and optimize customers' infrastructure.

However, the Company continues to be influenced by COVID-19-related trends impacting site access and the labor force, which have and may continue to negatively impact the Company's revenues and margins. Challenges in reaching sufficient vaccination levels and the introduction of new variants of COVID-19 have caused some governments to extend or reinstitute lockdowns and similar restrictive measures, which, in some cases, have limited the Company's ability to access customer sites to install and maintain its products and deliver services. In addition, the Company has experienced and continues to experience labor shortages at certain facilities as the Company expands its production capacity to meet increased customer demand. Although the Company is mitigating these shortages through focused recruitment efforts and competitive compensation packages, the Company could continue to experience such shortages in the future.

The extent to which the COVID-19 pandemic continues to impact the Company's results of operations and financial condition will depend on future developments that are highly uncertain and cannot be predicted. See Part I, Item 1A, of this Annual Report on Form 10-K for an additional discussion of risks related to COVID-19.

Restructuring and Cost Optimization Initiatives

To better align its resources with its growth strategies and reduce the cost structure of its global operations in certain underlying markets, the Company commits to restructuring plans as necessary. In fiscal 2021, the Company announced its plans to optimize its cost structure through broad-based SG&A actions focused on simplification, standardization and centralization, with the intent to deliver annualized savings of $300 million by fiscal 2023 (the "2021 Plan"). Additionally, the Company announced cost of sales actions to drive $250 million in annual run rate savings by fiscal 2023. The Company believes it is on track to deliver and exceed the productivity savings by fiscal 2023. For more information on the Company's restructuring plans, see "Liquidity and Capital Resources—Restructuring."

FISCAL YEAR 2022 COMPARED TO FISCAL YEAR 2021

Net Sales

	Year Ended September 30,		
(in millions)	2022	2021	Change
Net sales	$ 25,299	$ 23,668	7 %

The increase in net sales was due to higher organic sales ($2,033 million), incremental sales from acquisitions ($356 million) and the impact of prior year nonrecurring purchase accounting adjustments ($6 million), partially offset by the unfavorable impact of foreign currency translation ($741 million) and lower sales due to business divestitures ($23 million). Excluding the impact of foreign currency translation, business acquisitions and divestitures and nonrecurring adjustments, consolidated net sales increased 9% as compared to the prior year, attributable to higher volumes and increased pricing in response to inflation pressures. Refer to the "Segment Analysis" below within Item 7 for a discussion of net sales by segment.

Cost of Sales / Gross Profit

(in millions)	Year Ended September 30, 2022	2021	Change
Cost of sales	$ 16,956	$ 15,609	9 %
Gross profit	8,343	8,059	4 %
% of sales	33.0 %	34.1 %	

Cost of sales and gross profit both increased and gross profit as a percentage of sales decreased by 110 basis points. Gross profit increased due to organic sales growth and business acquisitions, partially offset by the unfavorable impact of foreign currency translation ($229 million), supply chain inefficiencies, price/cost pressures and the unfavorable year-over-year impact of net pension mark-to-market adjustments ($121 million). Gross profit as a percentage of sales decreased as the benefit of volume leverage was more than offset by supply chain inefficiencies and price/cost pressures. Refer to the "Segment Analysis" below within Item 7 for a discussion of segment earnings before interest, taxes and amortization ("EBITA").

Selling, General and Administrative Expenses

(in millions)	Year Ended September 30, 2022	2021	Change
Selling, general and administrative expenses	$ 5,945	$ 5,258	13 %
% of sales	23.5 %	22.2 %	

Selling, general and administrative expenses ("SG&A") increased by $687 million, and SG&A as a percentage of sales increased by 130 basis points. The increase in SG&A on a percentage basis was primarily due to the current year environmental remediation charge and related reserves ($255 million), the unfavorable year-over-year impact of net mark-to-market adjustments on pension plans ($154 million), the unfavorable year-over-year impact of net mark-to-market adjustments on restricted asbestos investments ($93 million), the absence of certain one-time cost mitigation actions and current year business acquisitions, partially offset by a favorable earn-out liability adjustment ($43 million) and favorable foreign currency translation ($141 million). Refer to the "Segment Analysis" below within Item 7 for a discussion of segment EBITA.

Restructuring and Impairment Costs

(in millions)	Year Ended September 30, 2022	2021	Change
Restructuring and impairment costs	$ 721	$ 242	*

* Measure not meaningful

Restructuring and impairment costs in fiscal 2022 included $419 million impairment costs related to businesses classified as held-for-sale, $75 million impairment of goodwill attributable to the Silent-Aire reporting unit, $45 million impairment of long-lived assets in the Building Solutions Asia Pacific segment reclassified from held for sale and $182 million in severance, long-lived asset impairments and other costs associated with the 2021 Plan. All of the fiscal 2021 restructuring and impairment costs were related to the 2021 Plan.

Refer to "Note 3, "Assets and Liabilities Held for Sale & Discontinued Operations," Note 8, "Goodwill and Other Intangible Assets," and Note 17, "Significant Restructuring and Impairment Costs," of the notes to consolidated financial statements for further disclosure related to the Company's restructuring plans and impairment costs.

Net Financing Charges

(in millions)	Year Ended September 30, 2022	2021	Change
Net financing charges	$ 213	$ 206	3 %

Refer to Note 10, "Debt and Financing Arrangements," of the notes to consolidated financial statements for further disclosure related to the Company's net financing charges.

Equity Income

(in millions)	Year Ended September 30, 2022	2021	Change
Equity income	$ 246	$ 261	-6 %

The decrease in equity income was primarily due to lower income at certain partially-owned affiliates of the Johnson Controls - Hitachi joint venture and at certain partially-owned affiliates within the Building Solutions North America segment. Refer to the "Segment Analysis" below within Item 7 for a discussion of segment EBITA.

Income Tax Provision

(in millions)	Year Ended September 30, 2022	2021	Change
Income tax provision (benefit)	$ (13)	$ 868	*
Effective tax rate	(1)%	33 %	

* Measure not meaningful

The statutory tax rate in Ireland of 12.5% is being used as a comparison since the Company is domiciled in Ireland.

For fiscal 2022, the effective tax rate for continuing operations was (1)% and was lower than the statutory tax rate primarily due to tax reserve adjustments as the result of expired statute of limitations for certain tax years and the benefits of continuing global tax planning initiatives, partially offset by the income tax effects of impairment and restructuring charges, valuation allowance adjustments, the establishment of a deferred tax liability on the outside basis difference of the Company's investment in certain subsidiaries as a result of the planned divestitures and tax rate differentials.

For fiscal 2021, the effective tax rate for continuing operations was 33% and was higher than the statutory tax rate primarily due to the tax impacts of an intercompany transfer of certain of the Company’s intellectual property rights, valuation allowance adjustments, the income tax effects of mark-to-market adjustments and tax rate differentials, partially offset by the benefits of continuing global tax planning initiatives.

The fiscal 2022 effective tax rate decreased as compared to fiscal 2021 primarily due to the income tax effects of mark-to-market adjustments, tax reserve adjustments as the result of expired statute of limitations for certain tax years and the benefits of continuing global tax planning initiatives, partially offset by valuation allowance adjustments, the establishment of a deferred tax liability on the outside basis difference of the Company's investment in certain subsidiaries as a result of the planned divestitures, impairment and restructuring charges and tax rate differentials. Refer to Note 18, "Income Taxes," of the notes to consolidated financial statements for further details.

The U.S. enacted the Inflation Reduction Act of 2022 (“IRA”) in August 2022, which, among other sections, creates a new book minimum tax of at least 15% of consolidated GAAP pre-tax income for corporations with average book income in excess of $1 billion. The book minimum tax will first apply to us in fiscal 2024. We do not expect the IRA to have a material impact on our effective tax rate. In addition, in October 2021, 136 out of 140 countries in the Organization for Economic Co-operation and Development ("OECD") Inclusive Framework on Base Erosion and Profit Shifting ("IF"), including Ireland, politically committed to potentially fundamental changes to the international corporate tax system, including the potential implementation of a global minimum corporate tax rate. While the details of these pronouncements presently remain unclear and timing of implementation uncertain, the impact of local country IF adoption could have a material impact on the Company's effective tax rate in future periods. It is also possible that jurisdictions in which the Company does business could react to such IF developments unilaterally by enacting tax legislation that could adversely affect the Company or its affiliates.

Income From Discontinued Operations, Net of Tax

	Year Ended September 30,		
(in millions)	2022	2021	Change
Income from discontinued operations, net of tax	$ —	$ 124	*

* Measure not meaningful

Refer to Note 3, "Assets and Liabilities Held for Sale & Discontinued Operations," of the notes to consolidated financial statements for further information.

Income Attributable to Noncontrolling Interests

	Year Ended September 30,		
(in millions)	2022	2021	Change
Income from continuing operations attributable to noncontrolling interests	$ 191	$ 233	-18 %

The decrease in income from continuing operations attributable to noncontrolling interests was primarily due to lower net income at certain partially-owned affiliates of the Johnson Controls - Hitachi joint venture.

Net Income Attributable to Johnson Controls

	Year Ended September 30,		
(in millions)	2022	2021	Change
Net income attributable to Johnson Controls	$ 1,532	$ 1,637	-6 %

The decrease in net income attributable to Johnson Controls was primarily due to higher SG&A, higher restructuring and impairment costs and the non-recurrence of prior year income from discontinued operations, partially offset by lower income tax provision and higher gross profit. Diluted earnings per share attributable to Johnson Controls was $2.19 for the year ended September 30, 2022 compared to $2.27 for the year ended September 30, 2021.

Comprehensive Income Attributable to Johnson Controls

	Year Ended September 30,		
(in millions)	2022	2021	Change
Comprehensive income attributable to Johnson Controls	$ 1,055	$ 1,979	-47 %

The decrease in comprehensive income attributable to Johnson Controls was due to a decrease in other comprehensive income attributable to Johnson Controls ($819 million) resulting primarily from foreign currency translation adjustments and lower net income attributable to Johnson Controls ($105 million). The year-over-year unfavorable foreign currency translation adjustments were primarily driven by the weakening of the British pound, euro and Canadian dollar in the current year compared to strengthening of the British pound, Canadian dollar and Mexican peso against the U.S. dollar in the prior year.

SEGMENT ANALYSIS

Management evaluates the performance of its business units based primarily on segment EBITA, which represents income from continuing operations before income taxes and noncontrolling interests, excluding general corporate expenses, intangible asset amortization, net financing charges, restructuring and impairment costs, and net mark-to-market adjustments related to pension and postretirement plans and restricted asbestos investments.

Effective October 1, 2021, the Company's marine businesses previously included in the Building Solutions Asia Pacific and Global Products reportable segments are now part of the Building Solutions EMEA/LA reportable segment. Historical information has been re-cast to present the comparative periods on a consistent basis. This change was not material to the segment presentation. Refer to Note 19, "Segment Information," of the notes to the consolidated financial statements for further information.

Beginning on October 1, 2021, the Company began reporting certain retrofit projects in the Building Solutions EMEA/LA and Building Solutions Asia Pacific segments as products and systems revenue on a prospective basis as they have evolved to be more aligned with other install offerings.

	Net Sales for the Year Ended September 30,			Segment EBITA for the Year Ended September 30,		
(in millions)	2022	2021	Change	2022	2021	Change
Building Solutions North America	$ 9,367	$ 8,685	8 %	$ 1,122	$ 1,204	-7 %
Building Solutions EMEA/LA	3,845	3,884	-1 %	358	401	-11 %
Building Solutions Asia Pacific	2,714	2,616	4 %	332	344	-3 %
Global Products	9,373	8,483	10 %	1,594	1,436	11 %
	$ 25,299	$ 23,668	7 %	$ 3,406	$ 3,385	1 %

Net Sales:

- The increase in Building Solutions North America was due to higher volumes and prices ($672 million) and incremental sales related to business acquisitions ($22 million), partially offset by the unfavorable impact of foreign currency translation ($12 million). The sales increase was led by strong growth in the HVAC & Controls platform.

- The decrease in Building Solutions EMEA/LA was due to the unfavorable impact of foreign currency translation ($269 million) and business divestitures ($22 million), partially offset by higher volumes and prices ($214 million) and incremental sales related to business acquisitions ($38 million). Excluding the impacts of foreign currency translation and business acquisitions and divestitures, sales increased, driven by growth in the Fire & Security platforms and the HVAC & Controls platform. By region, strong growth in Europe and single digit growth in Latin America was partially offset by growth decline in the Middle East.

- The increase in Building Solutions Asia Pacific was due to the net impact of higher prices and lower volumes ($178 million) and incremental sales related to business acquisitions ($42 million), partially offset by the unfavorable impact of foreign currency translation ($121 million) and business divestitures ($1 million). The increase in sales was led by strong demand for HVAC & Controls and Industrial Refrigeration equipment. By region, the sales growth was driven by sales in China.

- The increase in Global Products was due to higher volumes and prices ($975 million) and incremental sales related to business acquisitions ($254 million), partially offset by the unfavorable impact of foreign currency translation ($339 million). Sales growth was driven by broad-based demand for Commercial and Residential HVAC and Fire & Security products and strong price realization.

Segment EBITA:

- The decrease in Building Solutions North America was primarily due to lower absorption related to supply chain disruptions and labor constraints and the unfavorable impact of foreign currency translations, partially offset by productivity savings.

- The decrease in Building Solutions EMEA/LA was primarily due to supply chain disruptions, the suspension of operations in Russia ($11 million), and the unfavorable impact of foreign currency translation ($29 million), partially offset by favorable price/cost and productivity savings.

- The decrease in Building Solutions Asia Pacific was primarily due to supply chain disruptions, unfavorable mix and the unfavorable impact of foreign currency translation ($23 million), partially offset by favorable price/cost and productivity savings.

- The increase in Global Products was primarily due to favorable volumes and mix, productivity savings and a favorable earn-out liability adjustment ($43 million), partially offset by the current year environmental remediation charge ($222 million), the unfavorable impact of foreign currency translation ($37 million) and lower equity income driven primarily by certain partially-owned affiliates of the Johnson Controls - Hitachi joint venture ($13 million).

LIQUIDITY AND CAPITAL RESOURCES

Working Capital

	September 30,		
(in millions)	2022	2021	Change
Current assets	$ 11,685	$ 9,998	
Current liabilities	(11,239)	(9,098)	
	446	900	-50 %
Less: Cash and cash equivalents	(2,031)	(1,336)	
Add: Short-term debt	669	8	
Add: Current portion of long-term debt	865	226	
Less: Current assets held for sale	(387)	—	
Add: Current liabilities held for sale	236	—	
Working capital (as defined)	$ (202)	$ (202)	— %
Accounts receivable - net	$ 5,528	$ 5,613	-2 %
Inventories	2,510	2,057	22 %
Accounts payable	4,241	3,746	13 %

- The Company defines working capital as current assets less current liabilities, excluding cash and cash equivalents, short-term debt, the current portion of long-term debt, and current assets and liabilities held for sale. Management believes that this measure of working capital, which excludes financing-related items and businesses to be divested, provides a more useful measurement of the Company's operating performance.

- Working capital at September 30, 2022 remained consistent as compared to September 30, 2021 as an increase in inventory due to supply chain disruptions was offset by an increase in accounts payable.

- The Company's days sales in accounts receivable at September 30, 2022 were 51, a decrease from 58 at September 30, 2021, primarily due to collection efforts and increased use of receivables factoring programs. There has been no significant adverse change in the level of overdue receivables or significant changes in revenue recognition methods.

- The Company's inventory turns for the year ended September 30, 2022 were lower than the comparable period ended September 30, 2021 primarily due to supply chain disruptions.

- Days in accounts payable at September 30, 2022 were 85 days, higher from 76 days for the comparable period ended September 30, 2021, primarily due to timing of payments.

Cash Flows From Continuing Operations

	Year Ended September 30,	
(in millions)	2022	2021
Cash provided by operating activities	$ 1,990	$ 2,551
Cash used by investing activities	(693)	(1,090)
Cash used by financing activities	(516)	(2,131)

- The decrease in cash provided by operating activities was primarily due to the unfavorable impacts driven by supply chain disruptions. This resulted in increases in inventory and higher unbilled receivables due to shipment delays, which were partially offset by the benefit of receivables factoring activity and an increase in accounts payable due to timing of payments.

- The decrease in cash used by investing activities was primarily due to lower cash payments made for acquisitions.

- The increase in cash provided by financing activities was primarily due to higher short-term and long-term debt borrowings.

Capitalization

(in millions)	September 30, 2022	September 30, 2021	Change
Short-term debt	$ 669	$ 8	
Current portion of long-term debt	865	226	
Long-term debt	7,426	7,506	
Total debt	8,960	7,740	16 %
Less: Cash and cash equivalents	2,031	1,336	
Total net debt	6,929	6,404	8 %
Shareholders’ equity attributable to Johnson Controls	16,268	17,562	-7 %
Total capitalization	$ 23,197	$ 23,966	-3 %
Total net debt as a % of total capitalization	29.9 %	26.7 %	

- Net debt and net debt as a percentage of total capitalization are non-GAAP financial measures. The Company believes the percentage of total net debt to total capitalization is useful to understanding the Company’s financial condition as it provides a view of the extent to which the Company relies on external debt financing for its funding and is a measure of risk to its shareholders.

- The Company's material cash requirements primarily consist of working capital requirements, repayments of long-term debt and related interest, operating leases, dividends, capital expenditures, potential acquisitions and share repurchases.

- Refer to Note 10, "Debt and Financing Arrangements," of the notes to consolidated financial statements for additional information on debt obligations and maturities. Interest payable on long-term debt is $253 million in the twelve months following September 30, 2022 and $3.5 billion thereafter.

- Refer to Note 9, "Leases," of the notes to consolidated financial statements for additional information on lease obligations and maturities.

- As of September 30, 2022, purchase obligations are $1.5 billion payable in the next twelve months and $284 million payable thereafter. These purchase obligations represent commitments under enforceable and legally binding agreements, and do not represent the entire anticipated purchases in the future.

- As of September 30, 2022, the Company expects to contribute $41 million and $193 million to the global pension and postretirement plans in the next twelve months and thereafter, respectively.

- As of September 30, 2022, approximately $3.6 billion remains available under the Company's share repurchase authorization, which does not have an expiration date and may be amended or terminated by the Board of Directors at any time without prior notice. The Company expects to repurchase outstanding shares from time to time depending on market conditions, alternate uses of capital, liquidity and economic environment.

- The Company declared dividends of $1.39 per share in fiscal 2022 and intends to continue paying quarterly dividends in fiscal 2023.

- The Company believes its capital resources and liquidity position at September 30, 2022 are adequate to meet projected needs. The Company believes requirements for working capital, capital expenditures, dividends, stock repurchases, minimum pension contributions, debt maturities and any potential acquisitions in fiscal 2023 will continue to be funded from operations, supplemented by short- and long-term borrowings, if required. The Company currently manages its short-term debt position in the U.S. and euro commercial paper markets and bank loan markets. In the event the Company is unable to issue commercial paper, it would have the ability to draw on its $2.5 billion revolving credit facility which expires in December 2024 or its $0.5 billion 364-day revolving credit facility which expires in December 2022. There were no draws on the revolving credit facilities as of September 30, 2022 and 2021. The Company estimates that as of September 30, 2022, it could borrow up to $2.0 billion based on average borrowing levels during fiscal 2022 on committed credit lines. The Company maintains a shelf registration statement with the SEC under which it may issue additional debt securities, ordinary shares, preferred shares, depository shares, warrants purchase contracts and units that may be offered in one or more offerings on terms to be determined at the time of the offering. The Company anticipates that the proceeds of any offering would be used for general corporate purposes, including repayment of indebtedness, acquisitions, additions to working capital, repurchases of ordinary shares, dividends, capital expenditures and investments in the Company's subsidiaries. In addition, the Company held cash and cash equivalents of $2.0 billion as of September 30, 2022. As such, the Company believes it has sufficient financial resources to fund operations and meet its obligations for the foreseeable future.

- The Company's ability to access the global capital markets and the related cost of financing is dependent upon, among other factors, the Company's credit ratings. As of September 30, 2022, the Company's credit ratings and outlook were as follows:

Rating Agency	Short-Term Rating	Long-Term Rating	Outlook
S&P	A-2	BBB+	Stable
Moody's	P-2	Baa2	Stable

The security ratings set forth above are issued by unaffiliated third party rating agencies and are not a recommendation to buy, sell or hold securities. The ratings may be subject to revision or withdrawal by the assigning rating organization at any time.

- The Company entered into the following new or modified debt arrangements in fiscal 2022:

  - In November 2021, the Company entered into a €200 million ($196 million as of September 30, 2022) bank term loan which had an interest rate of EURIBOR plus 0.5% and was due and paid in October 2022.

  - In March 2022, the Company entered into two bank term loans totaling €285 million ($280 million as of September 30, 2022) which both have an interest rate of EURIBOR plus 0.5% and are due in March 2023.

  - In September 2022, the Company and its wholly owned subsidiary, TFSCA issued €600 million ($589 million as of September 30, 2022) of bonds with an interest rate of 3.0%, which are due in September 2028 and $400 million of bonds with an interest rate of 4.9%, which are due in December 2032.

  - In September 2022, the Company repaid a ¥25 billion ($181 million) term loan and entered into a ¥30 billion ($208 million as of September 30, 2022) term loan which is due in September 2027. Both the original and the new debt have an interest rate of LIBOR plus 0.4%.

- Financial covenants in the Company's revolving credit facilities requires a minimum consolidated shareholders’ equity attributable to Johnson Controls of at least $3.5 billion at all times. The revolving credit facility also limits the amount of debt secured by liens that may be incurred to a maximum aggregated amount of 10% of consolidated shareholders’ equity attributable to Johnson Controls for liens and pledges. For purposes of calculating these covenants, consolidated shareholders’ equity attributable to Johnson Controls is calculated without giving effect to (i) the application of ASC 715-60, "Defined Benefit Plans - Other Postretirement," or (ii) the cumulative foreign currency translation adjustment. As of September 30, 2022, the Company was in compliance with all financial covenants set forth in its credit agreements and the indentures governing its outstanding notes, and expects to remain in compliance for the foreseeable future. None of the Company’s debt agreements limit access to stated borrowing levels or require accelerated repayment in the event of a decrease in the Company's credit rating.

- The Company earns a significant amount of its income outside of the parent company. Outside basis differences in these subsidiaries are deemed to be permanently reinvested except in limited circumstances. However, in fiscal 2022, the Company recorded income tax expense related to a change in its assertion over the outside basis differences of its investment in certain subsidiaries as a result of the planned divestitures. The Company currently does not intend nor foresee a need to repatriate undistributed earnings included in the outside basis differences other than in tax efficient manners. The Company's intent is to reduce basis differences only when it would be tax efficient. The Company expects existing U.S. cash and liquidity to continue to be sufficient to fund the Company’s U.S. operating activities and cash commitments for investing and financing activities for at least the next twelve months and thereafter for the foreseeable future. In the U.S., should the Company require more capital than is generated by its operations, the Company could elect to raise capital in the U.S. through debt or equity issuances. The Company has borrowed funds in the U.S. and continues to have the ability to borrow funds in the U.S. at reasonable interest rates. In addition, the Company expects existing non-U.S. cash, cash equivalents, short-term investments and cash flows from operations to continue to be sufficient to fund the Company’s non-U.S. operating activities and cash commitments for investing activities, such as material capital expenditures, for at least the next twelve months and thereafter for the foreseeable future. Should the Company require more capital at the Luxembourg and Ireland holding and financing entities, other than amounts that can be provided in tax efficient methods, the Company could also elect to raise capital through debt or equity issuances. These alternatives could result in increased interest expense or other dilution of the Company’s earnings.

- The Company may from time to time purchase its outstanding debt through open market purchases, privately negotiated transactions or otherwise. Purchases or retirement of debt, if any, will depend on prevailing market conditions, liquidity requirements, contractual restrictions and other factors. The amounts involved may be material.

Restructuring

To better align its resources with its growth strategies and reduce the cost structure of its global operations in certain underlying markets, the Company commits to restructuring plans as necessary. Restructuring plans generally result in charges for workforce reductions, plant closures, asset impairments and other related costs which are reported as restructuring and impairment costs in the Company’s consolidated statements of income. The Company expects the restructuring actions to reduce cost of sales and SG&A due to reduced employee-related costs, depreciation and amortization expense.

In fiscal 2021, the Company announced plans to optimize its cost structure through broad-based SG&A actions focused on simplification, standardization and centralization, with the intent to deliver annualized savings of $300 million by fiscal 2023. Additionally, the Company announced cost of sales actions intended to drive $250 million in annual run rate savings by fiscal 2023. The one-time pre-tax costs associated with these actions were originally expected to be approximately $385 million across all segments and at Corporate through fiscal 2023. The Company has incurred and exceeded these costs during fiscal 2022 due to certain restructuring actions and expenses planned for fiscal 2023 being accelerated into fiscal 2022, which also resulted in incremental savings. During the year ended September 30, 2022, the Company recorded $182 million and in total, the Company has recorded $424 million of costs resulting from the 2021 restructuring plan, which is the total amount expected to be incurred for this restructuring plan. The Company has outstanding restructuring reserves of $82 million at September 30, 2022, all of which is expected to be paid in cash.

Co-Issued Securities: Summarized Financial Information

The following information is provided in compliance with Rule 13-01 of Regulation S-X under the Securities Exchange Act of 1934 with respect to the (i) $625 million aggregate principal amount of 1.750% Senior Notes due 2030 (the “2030 Notes”), (ii) €500 million aggregate principal amount of 0.375% Senior Notes due 2027 (the “2027 Notes”), (iii) €500 million aggregate principal amount of 1.000% Senior Notes due 2032 (the “2032 Notes”), (iv) $500 million aggregate principal amount of 2.000% Sustainability-Linked Senior Notes due 2031 (the “2031 Notes”), (v) €600 million aggregate principal amount of 3.000% Senior Notes due 2028 (the “2028 Notes”) and (vi) $400 million aggregate principal amount of 4.900% Senior Notes due 2032 (the “2032 Notes 2” and together with the 2032 Notes, the 2030 Notes, the 2028 Notes and the 2027 Notes, the “Notes”), each issued by Johnson Controls International plc ("Parent Company") and TFSCA, a corporate partnership limited by shares (*société en commandite par actions*) incorporated and organized under the laws of the Grand Duchy of Luxembourg (“Luxembourg”). Refer to Note 10, "Debt and Financing Arrangements," of the notes to consolidated financial statements for additional information.

TFSCA is a wholly-owned consolidated subsidiary of the Company that is 99.996% owned directly by the Parent Company and 0.004% owned by TFSCA’s sole general partner and manager, Tyco Fire & Security S.à r.l., which is itself wholly-owned by the Company. The Notes are the Parent Company’s and TFSCA’s unsecured, unsubordinated obligations. The Parent Company is incorporated and organized under the laws of Ireland and TFSCA is incorporated and organized under the laws of Luxembourg. The bankruptcy, insolvency, administrative, debtor relief and other laws of Luxembourg or Ireland, as applicable, may be materially different from, or in conflict with, those of the United States, including in the areas of rights of creditors, priority of governmental and other creditors, ability to obtain post-petition interest and duration of the proceeding. The application of these laws, or any conflict among them, could adversely affect noteholders' ability to enforce their rights under the Notes in those jurisdictions or limit any amounts that they may receive.

The following tables set forth summarized financial information of the Parent Company and TFSCA (collectively, the "Obligor Group") on a combined basis after intercompany transactions have been eliminated, including adjustments to remove the receivable and payable balances, investment in, and equity in earnings from, those subsidiaries of the Parent Company other than TFSCA (collectively, the "Non-Obligor Subsidiaries").

The following table presents summarized income statement information for the year ended September 30, 2022 (in millions):

	September 30, 2022
Net sales	$ —
Gross profit	—
Loss from continuing operations	(268)
Net loss	(268)
Income attributable to noncontrolling interests	—
Net loss attributable to the entity	(268)

Excluded from the table above are the intercompany transactions between the Obligor Group and Non-Obligor Subsidiaries as follows (in millions):

	September 30, 2022
Net sales	$ —
Gross profit	—
Income from continuing operations	92
Net income	92
Income attributable to noncontrolling interests	—
Net income attributable to the entity	92

The following table presents summarized balance sheet information (in millions):

	September 30, 2022
Current assets	$ 1,231
Noncurrent assets	243
Current liabilities	5,463
Noncurrent liabilities	7,176
Noncontrolling interests	—

Excluded from the table above are the intercompany balances between the Obligor Group and Non-Obligor Subsidiaries as follows (in millions):

	September 30, 2022
Current assets	$ 455
Noncurrent assets	2,952
Current liabilities	2,538
Noncurrent liabilities	6,228
Noncontrolling interests	—

The same accounting policies as described in Note 1, "Summary of Significant Accounting Policies," of the notes to consolidated financial statements are used by the Parent Company and each of its subsidiaries in connection with the summarized financial information presented above.

CRITICAL ACCOUNTING ESTIMATES

The Company prepares its consolidated financial statements in conformity with accounting principles generally accepted in the United States of America ("U.S. GAAP"). This requires management to make estimates and assumptions that affect reported amounts and related disclosures. Actual results could differ from those estimates. The following estimates are considered by management to be the most critical to the understanding of the Company's consolidated financial statements as they require significant judgments that could materially impact the Company’s results of operations, financial position and cash flows.

Revenue Recognition

The Company recognizes revenue from certain long-term contracts on an over time basis, with progress towards completion measured using a cost-to-cost input method based on the relationship between actual costs incurred and total estimated costs at completion. Total estimated costs at completion are based primarily on estimated purchase contract terms, historical performance trends and other economic projections. Factors that may result in a change to these estimates include unforeseen engineering problems, construction delays, cost inflation, the performance of subcontractors and major material suppliers, and weather conditions. As a result, changes to the original estimates may be required during the life of the contract. Such estimates are reviewed monthly and any adjustments to the measure of completion are recognized as adjustments to sales and gross profit using the cumulative catch-up method. Estimated losses are recorded when identified.

For agreements with multiple performance obligations, the Company allocates the transaction price of the contract to each performance obligation using the best estimate of the standalone selling price of each distinct good or service in the contract. In order to estimate relative selling price, market data and transfer price studies are utilized. If the standalone selling price is not directly observable, the Company estimates the standalone selling price using an adjusted market assessment approach or expected cost plus margin approach.

The Company considers the contractual consideration payable by the customer and assesses variable consideration that may affect the total transaction price, including discounts, rebates, refunds, credits or other similar sources of variable consideration, when determining the transaction price of each contract. The Company includes variable consideration in the estimated transaction price when it is probable that significant reversal of revenue recognized would not occur when the uncertainty associated with variable consideration is subsequently resolved. These estimates are based on the amount of consideration that the Company expects to be entitled to.

Goodwill and Indefinite-Lived Intangible Assets

The Company reviews goodwill for impairment annually as of July 31 or more frequently if events or changes in circumstances indicate the asset might be impaired. The Company performs impairment reviews for its reporting units, which have been determined to be the Company’s reportable segments or one level below the reportable segments in certain instances, using a fair value method based on management’s judgments and assumptions or third party valuations. The fair value of a reporting unit refers to the price that would be received to sell the unit as a whole in an orderly transaction between market participants at the measurement date. In estimating the fair value, the Company uses the multiples of earnings approach based on the average of published multiples of earnings of comparable entities with similar operations and economic characteristics that are applied to the Company's average of historical and future financial results. In certain instances, the Company uses discounted cash flow analyses or estimated sales price to further support the fair value estimates. The assumptions included in the impairment tests require judgment, and changes to these inputs could impact the results of the calculations. The key assumptions used in the impairment tests were management's projections of future cash flows, weighted-average cost of capital and long-term growth rates. Although the Company's cash flow forecasts are based on assumptions that are considered reasonable by management and consistent with the plans and estimates management is using to operate the underlying businesses, there are significant judgments in determining the expected future cash flows attributable to a reporting unit.

During its fiscal 2022 annual impairment test, the Company determined that its Silent-Aire reporting unit's goodwill was impaired by $75 million. No other reporting unit was determined to be at risk of failing the goodwill impairment test.

Indefinite-lived intangible assets are also subject to at least annual impairment testing. Indefinite-lived intangible assets primarily consist of trademarks and trade names and are tested for impairment using a relief-from-royalty method. A considerable amount of management judgment and assumptions are required in performing the impairment tests. The key assumptions used in the impairment tests were long-term revenue growth projections, weighted-average cost of capital, the royalty rate and general industry, market and macro-economic conditions.

The Company continuously monitors for events and circumstances that could negatively impact the key assumptions in determining fair value. While the Company believes the judgments and assumptions used in the goodwill and indefinite-lived intangible impairment tests are reasonable, different assumptions or changes in general industry, market and macro-economic conditions could change the estimated fair values and, therefore, future impairment charges could be required, which could be material to the consolidated financial statements.

Refer to Note 8, "Goodwill and other Intangible Assets," of the notes to consolidated financial statements for information regarding the results of goodwill and indefinite-lived intangible assets impairment testing performed in fiscal 2022 and 2021.

Pension Plans

The Company provides a range of benefits to its employees and retired employees, including pensions. Plan assets and obligations are measured annually, or more frequently if there is a significant remeasurement event, based on the Company’s measurement date utilizing various actuarial assumptions such as discount rates, assumed rates of return and compensation increases as of that date. The Company reviews its actuarial assumptions on an annual basis and makes modifications to the assumptions based on current rates and trends when appropriate.

The Company utilizes a mark-to-market approach for recognizing pension expenses, including measuring the market related value of plan assets at fair value and recognizing actuarial gains and losses in the fourth quarter of each fiscal year or at the date of a remeasurement event. Refer to Note 16, "Retirement Plans," of the notes to consolidated financial statements for disclosure of the Company's pension plans.

U.S. GAAP requires that companies recognize in the statement of financial position a liability for plans that are underfunded or unfunded, or an asset for plans that are over funded. U.S. GAAP also requires that companies measure the benefit obligations and fair value of plan assets that determine a benefit plan’s funded status as of the date of the employer’s fiscal year end.

The Company considers the expected benefit payments on a plan-by-plan basis when setting assumed discount rates. As a result, the Company uses different discount rates for each plan depending on the plan jurisdiction, the demographics of participants and the expected timing of benefit payments. For the U.S. pension plans, the Company uses a discount rate provided by an independent third party calculated based on an appropriate mix of high quality bonds. For the non-U.S. pension plans, the Company consistently uses the relevant country specific benchmark indices for determining the various discount rates. The Company’s weighted average discount rate on U.S. pension plans was 5.08% and 2.50% at September 30, 2022 and 2021, respectively. The Company’s weighted average discount rate on non-U.S. pension plans was 4.36% and 1.80% at September 30, 2022 and 2021, respectively.

In estimating the expected return on plan assets, the Company considers the historical returns on plan assets, adjusted for forward-looking considerations, inflation assumptions and the impact of the active management of the plans’ invested assets. Reflecting the relatively long-term nature of the plans’ obligations, approximately 19% of the plans’ assets are invested in equity securities and 66% in fixed income securities, with the remainder primarily invested in alternative investments. For the years ended September 30, 2022 and 2021, the Company’s expected long-term return on U.S. pension plan assets used to determine net periodic benefit cost was 7.00% and 6.50%, respectively. The actual rate of return on U.S. pension plans was below 7.00% in fiscal 2022 and above 6.50% in fiscal 2021. For the years ended September 30, 2022 and 2021, the Company’s weighted average expected long-term return on non-U.S. pension plan assets was 3.70% and 4.90%, respectively. The actual rate of return on non-U.S. pension plans was below 3.70% in fiscal 2022 and above 4.90% in fiscal 2021.

Beginning in fiscal 2023, the Company believes the long-term rate of return will approximate 8.25% for U.S. pension plans and 3.70% for non-U.S. pension plans. Any differences between actual investment results and the expected long-term asset returns will be reflected in net periodic benefit costs in the fourth quarter of each fiscal year or at the date of a significant remeasurement event. If the Company’s actual returns on plan assets are less than the Company’s expectations, additional contributions may be required.

In fiscal 2022, total employer contributions to the defined benefit pension plans were $93 million, none of which were voluntary contributions made by the Company. The Company expects to contribute approximately $38 million in cash to its defined benefit pension plans in fiscal 2023.

Based on information provided by its independent actuaries and other relevant sources, the Company believes that the assumptions used are reasonable; however, changes in these assumptions could impact the Company’s financial position, results of operations or cash flows.

Mark-to-market adjustments represent actuarial gains (losses) arising from changes in actuarial assumptions and actuarial experiences different from those assumed that are used to value the plan assets and the benefit obligations. The primary factors contributing to actuarial gains (losses) are changes in the discount rate used to value benefit obligations and the difference between expected and actual returns on plan assets. Mark-to-market adjustments are highly volatile and are difficult to forecast. Refer to Note 16, "Retirement Plans," of the notes to consolidated financial statements for further details.

The following chart illustrates the estimated increases (decreases) in projected benefit obligation and future ongoing pension expense, which excludes any potential mark-to-market adjustments, assuming an increase of 25 basis points in the key assumptions for the Company's pension plans (in millions):

	Pension Benefits			
	U.S. Plans		Non-U.S. Plans	
	Change in Projected Benefit Obligation	Change in Ongoing Pension Expense	Change in Projected Benefit Obligation	Change in Ongoing Pension Expense
Discount rate	$ (31)	$ 3	$ (39)	$ 1
Expected return on plan assets	—	(4)	—	(3)

Loss Contingencies

Accruals are recorded for various contingencies including legal proceedings, environmental matters, self-insurance and other claims that arise in the normal course of business. The accruals are based on judgment, the probability of losses and, where applicable, the consideration of opinions of internal and/or external legal counsel and actuarially determined estimates. Additionally, the Company records receivables from third party insurers when recovery has been determined to be probable.

The Company is subject to laws and regulations relating to protecting the environment. It is difficult to estimate the Company's ultimate level of liability at many remediation sites due to the large number of other parties that may be involved, the complexity of determining the relative liability among those parties, the uncertainty as to the nature and scope of the investigations and remediation to be conducted, the uncertainty in the application of law and risk assessment, the various choices and costs associated with diverse technologies that may be used in corrective actions at the sites, and the often quite lengthy periods over which eventual remediation may occur. It is possible that technological, regulatory or enforcement developments, the results of additional environmental studies or other factors could change the Company's expectations with respect to future charges and cash outlays, and such changes could be material to the Company's future results of operations, financial condition or cash flows. Nevertheless, the Company does not currently believe that any claims, penalties or costs in addition to the amounts accrued will have a material adverse effect on the Company's financial position, results of operations or cash flows. The Company provides for expenses associated with environmental remediation obligations when such amounts are probable and can be reasonably estimated. During fiscal 2022, the Company increased its accrual for environmental remediation liabilities by $228 million. Refer to Note 21, "Commitments and Contingencies," of the notes to consolidated financial statements.

The Company records liabilities for its workers' compensation, product, general and auto liabilities. The determination of these liabilities and related expenses is dependent on claims experience. For most of these liabilities, claims incurred but not yet reported are estimated by utilizing actuarial valuations based upon historical claims experience. The Company records receivables from third party insurers when recovery has been determined to be probable. The Company maintains captive insurance companies to manage its insurable liabilities.

Asbestos-Related Contingencies and Insurance Receivables

The Company and certain of its subsidiaries along with numerous other companies are named as defendants in personal injury lawsuits based on alleged exposure to asbestos-containing materials. The Company's estimate of the liability and corresponding insurance recovery for pending and future claims and defense costs is based on the Company's historical claim experience, and estimates of the number and resolution cost of potential future claims that may be filed and is discounted to present value from 2068 (which is the Company's reasonable best estimate of the actuarially determined time period through which asbestos-related claims will be filed against Company affiliates). Estimated asbestos-related defense costs are included in the asbestos liability. The Company's legal strategy for resolving claims also impacts these estimates. The Company considers various trends and developments in evaluating the period of time (the look-back period) over which historical claim and settlement experience is used to estimate and value claims reasonably projected to be made through 2068. Annually, the Company assesses the sufficiency of its estimated liability for pending and future claims and defense costs by evaluating actual experience regarding claims filed, settled and dismissed, and amounts paid in settlements. In addition to claims and settlement experience, the Company considers additional quantitative and qualitative factors such as changes in legislation, the legal environment, and the Company's defense strategy. The Company also evaluates the recoverability of its insurance receivable on an annual basis. The Company evaluates all of these factors and determines whether a change in the estimate of its liability for pending and future claims and defense costs or insurance receivable is warranted.

In connection with the recognition of liabilities for asbestos-related matters, the Company records asbestos-related insurance recoveries that are probable. The Company's estimate of asbestos-related insurance recoveries represents estimated amounts due to the Company for previously paid and settled claims and the probable reimbursements relating to its estimated liability for pending and future claims discounted to present value. In determining the amount of insurance recoverable, the Company considers available insurance, allocation methodologies, solvency and creditworthiness of the insurers. Refer to Note 21, "Commitments and Contingencies," of the notes to consolidated financial statements for a discussion on management's judgments applied in the recognition and measurement of asbestos-related assets and liabilities.

Income Taxes

Deferred tax assets and liabilities are recognized for the future tax consequences attributable to differences between financial statement carrying amounts of existing assets and liabilities and their respective tax bases and operating loss and other loss carryforwards. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. The Company records a valuation allowance that primarily represents non-U.S. operating and other loss carryforwards for which realization is uncertain. Management judgment is required in determining the Company’s provision for income taxes, deferred tax assets and liabilities, and the valuation allowance recorded against the Company’s net deferred tax assets.

The Company reviews the realizability of its deferred tax assets and related valuation allowances on a quarterly basis, or whenever events or changes in circumstances indicate that a review is required. In determining the requirement for a valuation allowance, the historical and projected financial results of the legal entity or consolidated group recording the net deferred tax asset are considered, along with any other positive or negative evidence. Since future financial results may differ from previous estimates, periodic adjustments to the Company’s valuation allowances may be necessary. At September 30, 2022, the Company had a valuation allowance of $6.0 billion for continuing operations, of which $5.5 billion relates to net operating loss carryforwards primarily in France, Germany, Ireland, Luxembourg, Mexico, Spain, United Kingdom and the U.S. for which sustainable taxable income has not been demonstrated; and $0.5 billion for other deferred tax assets.

The Company’s federal income tax returns and certain non-U.S. income tax returns for various fiscal years remain under various stages of audit by the IRS and respective non-U.S. tax authorities. Although the outcome of tax audits is always uncertain, management believes that it has appropriate support for the positions taken on its tax returns and that its annual tax provisions included amounts sufficient to pay assessments, if any, which may be proposed by the taxing authorities. At September 30, 2022, the Company had recorded a liability of $2.5 billion for its best estimate of the probable loss on certain of its tax positions, the majority of which is included in other noncurrent liabilities in the consolidated statements of financial position. Nonetheless, the amounts ultimately paid, if any, upon resolution of the issues raised by the taxing authorities may differ materially from the amounts accrued for each year.

The Company does not generally provide additional U.S. or non-U.S. income taxes on outside basis differences of consolidated subsidiaries included in shareholders’ equity attributable to Johnson Controls International plc, except in limited circumstances including anticipated taxation on planned divestitures. The reduction of the outside basis differences via the sale or liquidation of these subsidiaries and/or distributions could create taxable income. The Company’s intent is to reduce the outside basis differences only when it would be tax efficient. Refer to "Capitalization" within the "Liquidity and Capital Resources" section for discussion of U.S. and non-U.S. cash projections.

Refer to Note 18, "Income Taxes," of the notes to consolidated financial statements for the Company's income tax disclosures.

NEW ACCOUNTING PRONOUNCEMENTS

Refer to the "New Accounting Pronouncements" section within Note 1, "Summary of Significant Accounting Policies," of the notes to consolidated financial statements.

RISK MANAGEMENT

The Company selectively uses derivative instruments to reduce market risk associated with changes in foreign currency, commodities, stock-based compensation and interest rates. All hedging transactions are authorized and executed pursuant to clearly defined policies and procedures, which strictly prohibit the use of financial instruments for speculative purposes. At the inception of the hedge, the Company assesses the effectiveness of the hedge instrument and designates the hedge instrument as either (1) a hedge of a recognized asset or liability or of a recognized firm commitment (a fair value hedge), (2) a hedge of a forecasted transaction or of the variability of cash flows to be received or paid related to an unrecognized asset or liability (a cash flow hedge) or (3) a hedge of a net investment in a non-U.S. operation (a net investment hedge). The Company performs hedge effectiveness testing on an ongoing basis depending on the type of hedging instrument used. All other derivatives not designated as hedging instruments under ASC 815, "Derivatives and Hedging," are revalued in the consolidated statements of income.

For all foreign currency derivative instruments designated as cash flow hedges, retrospective effectiveness is tested on a monthly basis using a cumulative dollar offset test. The fair value of the hedged exposures and the fair value of the hedge instruments are revalued, and the ratio of the cumulative sum of the periodic changes in the value of the hedge instruments to the cumulative sum of the periodic changes in the value of the hedge is calculated. The hedge is deemed as highly effective if the ratio is between 80% and 125%. For commodity derivative contracts designated as cash flow hedges, effectiveness is tested using a regression calculation. Ineffectiveness is minimal as the Company aligns most of the critical terms of its derivatives with the supply contracts.

For net investment hedges, the Company assesses its net investment positions in the non-U.S. operations and compares it with the outstanding net investment hedges on a quarterly basis. The hedge is deemed effective if the aggregate outstanding principal of the hedge instruments designated as the net investment hedge in a non-U.S. operation does not exceed the Company's net investment positions in the respective non-U.S. operation.

Equity swaps and any other derivative instruments not designated as hedging instruments under ASC 815 require no assessment of effectiveness.

A discussion of the Company's accounting policies for derivative financial instruments is included in Note 1, "Summary of Significant Accounting Policies," of the notes to consolidated financial statements, and further disclosure relating to derivatives and hedging activities is included in Note 11, "Derivative Instruments and Hedging Activities," and Note 12, "Fair Value Measurements," of the notes to consolidated financial statements.

Foreign Exchange

The Company has manufacturing, sales and distribution facilities around the world and thus makes investments and enters into transactions denominated in various foreign currencies. In order to maintain strict control and achieve the benefits of the Company's global diversification, foreign exchange exposures for each currency are netted internally so that only its net foreign exchange exposures are, as appropriate, hedged with financial instruments.

The Company hedges 70% to 90% of the nominal amount of each of its known foreign exchange transactional exposures. The Company primarily enters into foreign currency exchange contracts to reduce the earnings and cash flow impact of the variation of non-functional currency denominated receivables and payables. Gains and losses resulting from hedging instruments offset the foreign exchange gains or losses on the underlying assets and liabilities being hedged. The maturities of the forward exchange contracts generally coincide with the settlement dates of the related transactions. Realized and unrealized gains and losses on these contracts are recognized in the same period as gains and losses on the hedged items. The Company also selectively hedges anticipated transactions that are subject to foreign exchange exposure, primarily with foreign currency exchange contracts, which are designated as cash flow hedges in accordance with ASC 815.

The Company has entered into foreign currency denominated debt obligations to selectively hedge portions of its net investment in non-U.S. subsidiaries. The currency effects of debt obligations are reflected in the accumulated other comprehensive income ("AOCI") account within shareholders' equity attributable to Johnson Controls ordinary shareholders where they offset gains and losses recorded on the Company's net investments globally.

At September 30, 2022 and 2021, the Company estimates that an unfavorable 10% change in the exchange rates would have decreased net unrealized gains by approximately $133 million and $213 million, respectively.

Interest Rates

Substantially all of the Company's outstanding debt has fixed interest rates, and, therefore, any fluctuation in market interest rates is not expected to have a material effect on the Company's results of operations. A 20 basis point increase/decrease in the average interest rate on the Company's variable rate debt would have an immaterial impact on interest expense.

Commodities

The Company uses commodity hedge contracts in the financial derivatives market in cases where commodity price risk cannot be naturally offset or hedged through supply base fixed price contracts. Commodity risks are systematically managed pursuant to policy guidelines. As a cash flow hedge, gains and losses resulting from the hedging instruments offset the gains or losses on purchases of the underlying commodities that will be used in the business. The maturities of the commodity hedge contracts coincide with the expected purchase of the commodities.

ENVIRONMENTAL, HEALTH AND SAFETY AND OTHER MATTERS

The Company’s global operations are governed by environmental laws and worker safety laws. Under various circumstances, these laws impose civil and criminal penalties and fines, as well as injunctive and remedial relief, for noncompliance and require remediation at sites where Company-related substances have been released into the environment.

The Company has expended substantial resources globally, both financial and managerial, to comply with applicable environmental laws and worker safety laws and to protect the environment and workers. The Company believes it is in substantial compliance with such laws and maintains procedures designed to foster and ensure compliance. However, the Company has been, and in the future may become, the subject of formal or informal enforcement actions or proceedings regarding noncompliance with such laws or the remediation of Company-related substances released into the environment. Such matters typically are resolved with regulatory authorities through commitments to compliance, abatement or remediation programs and in some cases payment of penalties. Historically, neither such commitments nor penalties imposed on the Company have been material.

Refer to Note 21, "Commitments and Contingencies," of the notes to consolidated financial statements for additional information.

ITEM 7A   QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

See "Risk Management" included in Item 7 - Management’s Discussion and Analysis of Financial Condition and Results of Operations.

ITEM 8 FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

Index to Consolidated Financial Statements

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Shareholders of Johnson Controls International plc

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated statements of financial position of Johnson Controls International plc and its subsidiaries (the "Company") as of September 30, 2022 and 2021, and the related consolidated statements of income, of comprehensive income, of shareholders' equity, and of cash flows for each of the three years in the period ended September 30, 2022, including the related notes and financial statement schedule listed in the accompanying index (collectively referred to as the "consolidated financial statements"). We also have audited the Company's internal control over financial reporting as of September 30, 2022, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of September 30, 2022 and 2021, and the results of its operations and its cash flows for each of the three years in the period ended September 30, 2022 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of September 30, 2022, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the COSO.

Change in Accounting Principle

As discussed in Note 1 to the consolidated financial statements, the Company changed the manner in which it accounts for leases as of October 1, 2019.

Basis for Opinions

The Company's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in Management's Report on Internal Control Over Financial Reporting appearing under Item 9A. Our responsibility is to express opinions on the Company's consolidated financial statements and on the Company's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

Definition and Limitations of Internal Control over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Critical Audit Matters

The critical audit matter communicated below is a matter arising from the current period audit of the consolidated financial statements that was communicated or required to be communicated to the audit committee and that (i) relates to accounts or disclosures that are material to the consolidated financial statements and (ii) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the accounts or disclosures to which it relates.

Uncertain Tax Positions

As described in Note 18 to the consolidated financial statements, the Company has recorded liabilities for uncertain tax positions totaling $2,537 million, primarily as a non-current liability, as of September 30, 2022. The Company is subject to income taxes in the U.S. and numerous non-U.S. jurisdictions. Judgment is required by management in determining the Company's worldwide provision for income taxes and recording the related income tax assets and liabilities. In the ordinary course of the Company's business, there are many transactions and calculations where the ultimate tax determination is uncertain. As disclosed by management, a liability for the best estimate of the probable loss on certain of the Company's tax positions has been recorded by management. The Company's income tax filings for various fiscal years remain under various stages of audit by the IRS and respective non-U.S. tax authorities. The amounts ultimately paid, if any, upon resolution of the issues raised by the taxing authorities may differ materially from the amounts accrued for each year.

The principal considerations for our determination that performing procedures relating to uncertain tax positions is a critical audit matter are (i) the significant judgment by management in identifying and recording the estimated probable loss for each uncertain tax position; (ii) a high degree of auditor judgment, subjectivity, and effort in performing procedures to evaluate the identification and accurate measurement of uncertain tax positions, (iii) the evaluation of audit evidence available to support the tax liabilities for uncertain tax positions is complex and resulted in significant auditor judgment as the nature of the evidence is often highly subjective, and (iv) the audit effort involved the use of professionals with specialized skill and knowledge.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to management's assessment of uncertain tax positions, including controls over the identification and estimate of probable loss for uncertain tax positions. These procedures also included, among others (i) for a sample of uncertain tax positions by jurisdiction, testing the information used in the calculation of the estimate of probable loss and testing the calculation of the estimate of probable loss; (ii) testing the completeness of management's assessment of the identification of uncertain tax positions; and (iii) evaluating the status and results of income tax audits with the relevant tax authorities, as applicable. Professionals with specialized skill and knowledge were used to assist in the evaluation of the completeness and measurement of the Company's uncertain tax positions, including evaluating the reasonableness of management's assessment of whether tax positions are more-likely-than-not of being sustained and the amount of potential benefit to be realized, and the application of relevant tax laws.

/s/ PricewaterhouseCoopers LLP
Milwaukee, Wisconsin
November 15, 2022

We have served as the Company's auditor since 1957.

Johnson Controls International plc
Consolidated Statements of Income

(in millions, except per share data)	Year Ended September 30, 2022	2021	2020
Net sales			
Products and systems	$ 19,274	$ 17,202	$ 16,253
Services	6,025	6,466	6,064
	25,299	23,668	22,317
Cost of sales			
Products and systems	13,533	11,848	11,401
Services	3,423	3,761	3,505
	16,956	15,609	14,906
Gross profit	8,343	8,059	7,411
Selling, general and administrative expenses	(5,945)	(5,258)	(5,665)
Restructuring and impairment costs	(721)	(242)	(783)
Net financing charges	(213)	(206)	(231)
Equity income	246	261	171
Income from continuing operations before income taxes	1,710	2,614	903
Income tax provision (benefit)	(13)	868	108
Income from continuing operations	1,723	1,746	795
Income from discontinued operations, net of tax (Note 3)	—	124	—
Net income	1,723	1,870	795
Income from continuing operations attributable to noncontrolling interests	191	233	164
Net income attributable to Johnson Controls	$ 1,532	$ 1,637	$ 631
Amounts attributable to Johnson Controls ordinary shareholders:			
Income from continuing operations	$ 1,532	$ 1,513	$ 631
Income from discontinued operations	—	124	—
Net income	$ 1,532	$ 1,637	$ 631
Basic earnings per share attributable to Johnson Controls			
Continuing operations	$ 2.20	$ 2.11	$ 0.84
Discontinued operations	—	0.17	—
Net income	$ 2.20	$ 2.28	$ 0.84
Diluted earnings per share attributable to Johnson Controls			
Continuing operations	$ 2.19	$ 2.10	$ 0.84
Discontinued operations	—	0.17	—
Net income	$ 2.19	$ 2.27	$ 0.84

The accompanying notes are an integral part of the consolidated financial statements.

Johnson Controls International plc
Consolidated Statements of Comprehensive Income

	Year Ended September 30,		
(in millions)	**2022**	**2021**	**2020**
Net income	$ 1,723	$ 1,870	$ 795
Other comprehensive income (loss), net of tax:			
Foreign currency translation adjustments	(603)	376	25
Realized and unrealized gains (losses) on derivatives	7	(18)	8
Pension and postretirement plans	(3)	4	8
Other comprehensive income (loss)	(599)	362	41
Total comprehensive income	1,124	2,232	836
Comprehensive income attributable to noncontrolling interests:			
Net income	191	233	164
Other comprehensive income (loss), net of tax:			
Foreign currency translation adjustments	(123)	19	18
Realized and unrealized gains on derivatives	1	1	4
Other comprehensive income (loss)	(122)	20	22
Comprehensive income attributable to noncontrolling interests	69	253	186
Comprehensive income attributable to Johnson Controls	$ 1,055	$ 1,979	$ 650

The accompanying notes are an integral part of the consolidated financial statements.

Johnson Controls International plc
Consolidated Statements of Financial Position

(in millions, except par value and share data)	September 30, 2022	September 30, 2021
Assets		
Cash and cash equivalents	$ 2,031	$ 1,336
Accounts receivable - net	5,528	5,613
Inventories	2,510	2,057
Current assets held for sale	387	—
Other current assets	1,229	992
Current assets	11,685	9,998
Property, plant and equipment - net	3,042	3,228
Goodwill	17,328	18,335
Other intangible assets - net	4,641	5,549
Investments in partially-owned affiliates	963	1,066
Noncurrent assets held for sale	751	156
Other noncurrent assets	3,748	3,558
Total assets	$ 42,158	$ 41,890
Liabilities and Equity		
Short-term debt	$ 669	$ 8
Current portion of long-term debt	865	226
Accounts payable	4,241	3,746
Accrued compensation and benefits	978	1,008
Deferred revenue	1,768	1,637
Current liabilities held for sale	236	—
Other current liabilities	2,482	2,473
Current liabilities	11,239	9,098
Long-term debt	7,426	7,506
Pension and postretirement benefit obligations	358	628
Noncurrent liabilities held for sale	62	—
Other noncurrent liabilities	5,671	5,905
Noncurrent liabilities	13,517	14,039
Commitments and contingencies (Note 21)		
Ordinary shares (par value $0.01; 2.0 billion shares authorized; shares issued: 2022 - 717,726,243; 2021 - 737,090,363)	7	7
Ordinary A shares (par value €1.00; 40,000 shares authorized, none outstanding as of September 30, 2022 and 2021)	—	—
Preferred shares (par value $0.01; 200,000,000 shares authorized, none outstanding as of September 30, 2022 and 2021)	—	—
Ordinary shares held in treasury, at cost (shares held: 2022 - 29,029,475; 2021 - 28,356,889)	(1,203)	(1,152)
Capital in excess of par value	17,224	17,116
Retained earnings	1,151	2,025
Accumulated other comprehensive loss	(911)	(434)
Shareholders’ equity attributable to Johnson Controls	16,268	17,562
Noncontrolling interests	1,134	1,191
Total equity	17,402	18,753
Total liabilities and equity	$ 42,158	$ 41,890

The accompanying notes are an integral part of the consolidated financial statements.

Johnson Controls International plc
Consolidated Statements of Cash Flows

(in millions)	Year Ended September 30, 2022	2021	2020
Operating Activities of Continuing Operations			
Net income from continuing operations attributable to Johnson Controls	$ 1,532	$ 1,513	$ 631
Income from continuing operations attributable to noncontrolling interests	191	233	164
Net income from continuing operations	1,723	1,746	795
Adjustments to reconcile net income from continuing operations to cash provided by operating activities:			
Depreciation and amortization	830	845	822
Pension and postretirement benefit expense (income)	(216)	(551)	118
Pension and postretirement contributions	(96)	(68)	(61)
Equity in earnings of partially-owned affiliates, net of dividends received	30	(117)	(36)
Deferred income taxes	(141)	36	(537)
Non-cash restructuring and impairment charges	555	98	582
Equity-based compensation expense	102	76	74
Other - net	(58)	(85)	(90)
Changes in assets and liabilities, excluding acquisitions and divestitures:			
Accounts receivable	(427)	(143)	534
Inventories	(773)	(219)	45
Other assets	(362)	(164)	(52)
Restructuring reserves	(7)	(44)	(29)
Accounts payable and accrued liabilities	1,270	813	(717)
Accrued income taxes	(440)	328	1,031
Cash provided by operating activities from continuing operations	1,990	2,551	2,479
Investing Activities of Continuing Operations			
Capital expenditures	(592)	(552)	(443)
Sale of property, plant and equipment	127	124	127
Acquisition of businesses, net of cash acquired	(269)	(725)	(77)
Business divestitures, net of cash divested	16	19	135
Other - net	25	44	—
Cash used by investing activities from continuing operations	(693)	(1,090)	(258)
Financing Activities of Continuing Operations			
Increase (decrease) in short-term debt - net	923	(17)	(33)
Increase in long-term debt	1,227	496	1,804
Repayment of long-term debt	(184)	(507)	(1,386)
Stock repurchases and retirements	(1,441)	(1,307)	(2,204)
Payment of cash dividends	(916)	(762)	(790)
Proceeds from the exercise of stock options	17	178	75
Dividends paid to noncontrolling interests	(121)	(142)	(114)
Employee equity-based compensation withholding taxes	(51)	(33)	(34)
Cash paid to acquire a noncontrolling interest	(1)	(14)	(132)
Other - net	31	(23)	(10)
Cash used by financing activities from continuing operations	(516)	(2,131)	(2,824)
Discontinued Operations			
Cash used by operating activities	(4)	(64)	(260)
Cash used by financing activities	—	—	(113)
Cash used by discontinued operations	(4)	(64)	(373)
Effect of exchange rate changes on cash, cash equivalents and restricted cash	(53)	116	115
Increase (decrease) in cash, cash equivalents and restricted cash	724	(618)	(861)
Cash, cash equivalents and restricted cash at beginning of period	1,342	1,960	2,821
Cash, cash equivalents and restricted cash at end of period	2,066	1,342	1,960
Less: Restricted cash	35	6	9
Cash and cash equivalents at end of period	$ 2,031	$ 1,336	$ 1,951

The accompanying notes are an integral part of the consolidated financial statements.

Johnson Controls International plc
Consolidated Statements of Shareholders' Equity

(in millions)	Year Ended September 30, 2022	2021	2020
Shareholders' Equity Attributable to Johnson Controls			
Beginning Balance	$ 17,562	$ 17,447	$ 19,766
Ordinary Shares			
Beginning balance	7	8	8
Repurchases and retirements of ordinary shares	—	(1)	—
Ending balance	7	7	8
Ordinary Shares Held in Treasury, at Cost			
Beginning balance	(1,152)	(1,119)	(1,086)
Employee equity-based compensation withholding taxes	(51)	(33)	(33)
Ending balance	(1,203)	(1,152)	(1,119)
Capital in Excess of Par Value			
Beginning balance	17,116	16,865	16,812
Change in noncontrolling interest share	—	(8)	(83)
Share-based compensation expense	88	76	61
Other, including options exercised	20	183	75
Ending balance	17,224	17,116	16,865
Retained Earnings			
Beginning balance	2,025	2,469	4,827
Net income attributable to Johnson Controls	1,532	1,637	631
Cash dividends declared	(965)	(771)	(780)
Repurchases and retirements of ordinary shares	(1,441)	(1,306)	(2,204)
Adoption of ASC 842	—	—	(5)
Adoption of ASU 2016-13	—	(4)	—
Ending balance	1,151	2,025	2,469
Accumulated Other Comprehensive Income (Loss)			
Beginning balance	(434)	(776)	(795)
Other comprehensive income (loss)	(477)	342	19
Ending balance	(911)	(434)	(776)
Ending Balance	16,268	17,562	17,447
Shareholders' Equity Attributable to Noncontrolling Interests			
Beginning Balance	1,191	1,086	1,063
Comprehensive income attributable to noncontrolling interests	69	253	186
Dividends attributable to noncontrolling interests	(131)	(142)	(114)
Change in noncontrolling interest share	5	(6)	(49)
Ending Balance	1,134	1,191	1,086
Total Shareholders' Equity	$ 17,402	$ 18,753	$ 18,533
Cash Dividends Declared per Ordinary Share	$ 1.39	$ 1.07	$ 1.04

The accompanying notes are an integral part of the consolidated financial statements.

1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

The consolidated financial statements include the consolidated accounts of Johnson Controls International plc, a public limited company organized under the laws of Ireland, and its subsidiaries (Johnson Controls International plc and all its subsidiaries, hereinafter collectively referred to as the "Company," "Johnson Controls" or "JCI plc").

The Company's fiscal year ends on September 30. Unless otherwise stated, references to years in this report relate to fiscal years rather than calendar years.

Nature of Operations

Johnson Controls International plc, headquartered in Cork, Ireland, is a global leader in smart, healthy and sustainable buildings, serving a wide range of customers in more than 150 countries. The Company’s products, services, systems and solutions advance the safety, comfort and intelligence of spaces to serve people, places and the planet. The Company is committed to helping its customers win and creating greater value for all of its stakeholders through its strategic focus on buildings.

The Company is a global leader in engineering, manufacturing, commissioning and retrofitting building products and systems, including residential and commercial heating, ventilating, air-conditioning ("HVAC") equipment, industrial refrigeration systems, controls, security systems, fire-detection systems and fire-suppression solutions. The Company further serves customers by providing technical services, including maintenance, management and repair of equipment (in the HVAC, industrial refrigeration, controls, security and fire-protection space), energy-management consulting and data-driven “smart building” services and solutions powered by its OpenBlue software platform and capabilities. The Company partners with customers by leveraging its broad product portfolio and digital capabilities powered by OpenBlue, together with its direct channel service and solutions capabilities, to deliver outcome-based solutions across the lifecycle of a building that address customers’ needs to improve energy efficiency, enhance security, create healthy environments and reduce greenhouse gas emissions.

Principles of Consolidation

The consolidated financial statements include the consolidated accounts of Johnson Controls International plc and its subsidiaries that are consolidated in conformity with accounting principles generally accepted in the United States of America ("U.S. GAAP"). All significant intercompany transactions have been eliminated. The results of companies acquired or disposed of during the year are included in the consolidated financial statements from the effective date of acquisition or up to the date of disposal. Investments in partially-owned affiliates are accounted for by the equity method when the Company exercises significant influence, which typically occurs when its ownership interest exceeds 20%, and the Company does not have a controlling interest.

The Company consolidates variable interest entities ("VIE") when it has the power to direct the significant activities of the entity and the obligation to absorb losses or receive benefits from the entity that may be significant. The Company did not have any material consolidated or nonconsolidated VIEs in its continuing operations for the presented reporting periods.

Use of Estimates

The preparation of consolidated financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

Fair Value of Financial Instruments

ASC 820, "Fair Value Measurement," defines fair value as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. ASC 820 also establishes a three-level fair value hierarchy that prioritizes information used in developing assumptions when pricing an asset or liability as follows:

Level 1: Observable inputs such as quoted prices in active markets for identical assets or liabilities;

Level 2: Quoted prices in active markets for similar assets or liabilities, quoted prices for identical or similar assets or liabilities in markets that are not active, or inputs, other than quoted prices in active markets, that are observable either directly or indirectly; and

Level 3: Unobservable inputs where there is little or no market data, which requires the reporting entity to develop its own assumptions.

ASC 820 requires the use of observable market data, when available, in making fair value measurements. When inputs used to measure fair value fall within different levels of the hierarchy, the level within which the fair value measurement is categorized is based on the lowest level input that is significant to the fair value measurement.

The fair values of cash and cash equivalents, accounts receivable, short-term debt and accounts payable approximate their carrying values.

Assets and Liabilities Held for Sale

Assets and liabilities (disposal groups) to be sold are classified as held for sale in the period in which all of the following criteria are met:

- Management, having the authority to approve the action, commits to a plan to sell the disposal group;
- The disposal group is available for immediate sale in its present condition subject only to terms that are usual and customary for sales of such disposal groups;
- An active program to locate a buyer and other actions required to complete the plan to sell the disposal group have been initiated;
- Sale of the disposal group is probable and transfer of the disposal group is expected to qualify for recognition as a completed sale within one year, except if events or circumstances beyond the Company's control extend the period of time required to sell the disposal group beyond one year;
- The disposal group is being actively marketed for sale at a price that is reasonable in relation to its current fair value; and
- Actions required to complete the plan indicate that it is unlikely that significant changes to the plan will be made or that the plan will be withdrawn.

The Company initially measures a disposal group that is classified as held for sale at the lower of its carrying value or fair value less any costs to sell. Any loss resulting from this measurement is recognized in the period in which the held for sale criteria are met. Conversely, gains are not recognized on the sale of a disposal group until the date of sale. The Company assesses the fair value of a disposal group, less any costs to sell, each reporting period it remains classified as held for sale and reports any subsequent changes as an adjustment to the carrying value of the disposal group, as long as the new carrying value does not exceed the carrying value of the disposal group at the time it was initially classified as held for sale.

Upon determining that a disposal group meets the criteria to be classified as held for sale, the Company reports the assets and liabilities of the disposal group, if material, in the line items assets held for sale and liabilities held for sale in the consolidated statements of financial position.

Cash and Cash Equivalents

Cash equivalents include all highly liquid investments with an original maturity of three months or less when purchased.

Restricted Cash

Restricted cash relates to amounts restricted for payment of asbestos liabilities and certain litigation and environmental matters. Restricted cash is recorded within other current assets in the consolidated statements of financial position and totaled $35 million and $6 million at September 30, 2022 and 2021, respectively.

Receivables

Receivables consist of amounts billed and currently due from customers and unbilled costs and accrued profits related to revenues on long-term contracts that have been recognized for accounting purposes but not yet billed to customers. The Company extends credit to customers in the normal course of business and maintains an allowance for expected credit losses resulting from the inability or unwillingness of customers to make required payments. The allowance for expected credit losses is based on historical experience, existing economic conditions, reasonable and supportable forecasts, and any specific customer collection issues the Company has identified. The Company evaluates the reasonableness of the allowance for expected credit losses on a quarterly basis.

The Company enters into various factoring agreements to sell certain accounts receivable to third-party financial institutions. For the majority of these agreements, for ease of administration, the Company collects customer payments related to the factored receivables on behalf of the financial institutions but otherwise maintains no continuing involvement with respect to the factored receivables. Sales of accounts receivable are reflected as a reduction of accounts receivable in the consolidated statements of financial position and the proceeds are included in cash flows from operating activities in the consolidated statements of cash flows.

Inventories

Inventories are stated at the lower of cost or net realizable value using the first-in, first-out ("FIFO") method. Finished goods and work-in-process inventories include material, labor and manufacturing overhead costs.

Property, Plant and Equipment

Property, plant and equipment are recorded at cost. Depreciation is provided over the estimated useful lives of the respective assets using the straight-line method for financial reporting purposes and accelerated methods for income tax purposes. The estimated useful lives generally range from 3 to 40 years for buildings and improvements, up to 15 years for subscriber systems, and from 3 to 15 years for machinery and equipment. Interest on borrowings is capitalized during the active construction period of major capital projects, added to the cost of the underlying assets and amortized over the useful lives of the assets.

Goodwill and Indefinite-Lived Intangible Assets

Goodwill reflects the cost of an acquisition in excess of the fair values assigned to identifiable net assets acquired. Goodwill is reviewed for impairment during the fourth fiscal quarter or more frequently if events or changes in circumstances indicate the asset might be impaired. The Company performs impairment reviews for its reporting units, which have been determined to be the Company’s reportable segments or one level below the reportable segments in certain instances, using a fair value method based on management’s judgments and assumptions or third party valuations. The fair value of a reporting unit refers to the price that would be received to sell the unit as a whole in an orderly transaction between market participants at the measurement date. In estimating the fair value, the Company uses the multiples of earnings approach based on the average of published multiples of earnings of comparable entities with similar operations and economic characteristics and applies the multiples to the Company's average of historical and future financial results for each reporting unit. In certain instances, the Company uses discounted cash flow analyses or estimated sales price to further support the fair value estimates. The inputs utilized in the analyses are classified as Level 3 inputs within the fair value hierarchy as defined in ASC 820, "Fair Value Measurement." The estimated fair value is then compared to the carrying amount of the reporting unit, including recorded goodwill. The Company is subject to financial statement risk to the extent that the carrying amount exceeds the estimated fair value.

Indefinite-lived intangible assets are also subject to at least annual impairment testing. Indefinite-lived intangible assets primarily consist of trademarks and trade names and are tested for impairment using a relief-from-royalty method. A considerable amount of management judgment and assumptions are required in performing the impairment tests.

Leases

Lessee arrangements

The Company leases certain administrative, production and other facilities, fleet vehicles, information technology equipment and other equipment under arrangements that are accounted for as operating leases. The Company determines whether an arrangement contains a lease at contract inception based on whether the arrangement involves the use of a physically distinct identified asset and whether the Company has the right to obtain substantially all of the economic benefits from the use of the asset throughout the period as well as the right to direct the use of the asset.

The Company adopted ASU 2016-02, "Leases (Topic 842)" and the related amendments using a modified-retrospective approach as of October 1, 2019.

Right-of-use assets represent the Company’s right to use an underlying asset for the lease term and lease liabilities represent its obligation to make lease payments arising from the lease. Right-of-use assets and the corresponding lease liabilities are recognized at commencement date based on the present value of lease payments for all leases with terms longer than twelve months. The majority of the Company's leases do not provide an implicit interest rate. To determine the present value of lease payments, the Company uses its incremental borrowing rate based on information available on the lease commencement date or the implicit rate if it is readily determinable. The Company determines its incremental borrowing rate based on a comparable market yield curve consistent with its credit rating, term of the lease and relative economic environment. The Company has elected to combine lease and nonlease components for its leases.

Most leases contain options to renew or terminate the lease. Right-of-use assets and lease liabilities reflect only the options which the Company is reasonably certain to exercise.

The Company has certain real estate leases that contain variable lease payments which are based on changes in the Consumer Price Index (CPI). Additionally, the Company’s leases generally require it to pay for fuel, maintenance, repair, insurance and taxes. These payments are not included in the right-of-use asset or lease liability and are expensed as incurred.

Lease expense is recognized on a straight-line basis over the lease term.

Lessor arrangements

The Company has monitoring services and maintenance agreements within its security business that include subscriber system assets for which the Company retains ownership. These agreements contain both lease and nonlease components. The Company has elected to combine lease and nonlease components for these arrangements where the timing and pattern of transfer of the lease and nonlease components are the same and the lease component would be classified as an operating lease if accounted for separately. The Company has concluded that in these arrangements the nonlease components are the predominant characteristic, and as a result, the combined component is accounted for under the revenue guidance.

Impairment of Long-Lived Assets

Long-lived assets, including right-of-use assets under operating leases, other tangible assets and intangible assets with definitive lives, are reviewed for impairment whenever events or changes in circumstances indicate that the asset’s carrying amount may not be recoverable. The Company conducts its long-lived asset impairment analyses in accordance with ASC 360-10-15, "Impairment or Disposal of Long-Lived Assets," ASC 350-30, "General Intangibles Other than Goodwill" and ASC 985-20, "Costs of Software to be Sold, Leased, or Marketed."

Assets and liabilities are grouped at the lowest level for which identifiable cash flows are largely independent of the cash flows of other assets and liabilities and evaluates the asset group against the sum of the undiscounted future cash flows. If the undiscounted cash flows do not indicate the carrying amount of the asset group is recoverable, an impairment charge is measured as the amount by which the carrying amount of the asset group exceeds its fair value based on discounted cash flow analysis or appraisals. Intangible assets acquired in a business combination that are used in research and development activities are considered indefinite-lived until the completion or abandonment of the associated research and development efforts. During the period that those assets are considered indefinite lived, they are not amortized but are tested for impairment annually and more frequently if events or changes in circumstances indicate that it is more likely than not that the asset is impaired. If the carrying amount of an intangible asset exceeds its fair value, the Company recognizes an impairment loss in an amount equal to that excess. Unamortized capitalized costs of a computer software product are compared to the net realizable value of the product. The amount by which the unamortized capitalized costs of a computer software product exceed the net realizable value of that asset is written off.

Revenue Recognition

Revenue from certain long-term contracts to design, manufacture and install building products and systems as well as unscheduled repair or replacement services is recognized on an over time basis, with progress towards completion measured using a cost-to-cost input method based on the relationship between actual costs incurred and total estimated costs at completion. The cost-to-cost input method is used as it best depicts the transfer of control to the customer that occurs as the Company incurs costs. Changes to the original estimates may be required during the life of the contract and such estimates are reviewed monthly. If contract modifications result in additional goods or services that are distinct from those transferred before the modification, they are accounted for prospectively as if the Company entered into a new contract. If the goods or services in the modification are not distinct from those in the original contract, sales and gross profit are adjusted using the cumulative catch-up method for revisions in estimated total contract costs and contract values. Estimated losses are recorded when identified. The Company does not adjust the promised amount of consideration for the effects of a significant financing component as at contract inception the Company expects to receive the payment within twelve months of transfer of goods or services.

The Company enters into extended warranties and long-term service and maintenance agreements with certain customers. For these arrangements, revenue is recognized over time on a straight-line basis over the respective contract term.

The Company also sells certain HVAC and refrigeration products and services in bundled arrangements with multiple performance obligations, such as equipment, commissioning, service labor and extended warranties. Approximately four to twelve months separate the timing of the first deliverable until the last piece of equipment is delivered, and there may be extended warranty arrangements with duration of one to five years commencing upon the end of the standard warranty period. In addition, the Company sells security monitoring systems that may have multiple performance obligations, including equipment, installation, monitoring services and maintenance agreements. Revenues associated with the sale of equipment and related installations are recognized over time on a cost-to-cost input method, while the revenue for monitoring and maintenance services are recognized over time as services are rendered. The transaction price is allocated to each performance obligation based on the relative selling price method. In order to estimate relative selling price, market data and transfer price studies are utilized. If the standalone selling price is not directly observable, the Company estimates the standalone selling price using an adjusted market assessment approach or expected cost plus margin approach. For transactions in which the Company retains ownership of the subscriber system asset, fees for monitoring and maintenance services are recognized over time on a straight-line basis over the contract term. Non-refundable fees received in connection with the initiation of a monitoring contract, along with associated direct and incremental selling costs, are deferred and amortized over the estimated life of the contract.

In all other cases, the Company recognizes revenue at the point in time when control over the goods or services transfers to the customer.

The Company considers the contractual consideration payable by the customer and assesses variable consideration that may affect the total transaction price, including discounts, rebates, refunds, credits or other similar sources of variable consideration, when determining the transaction price of each contract. The Company includes variable consideration in the estimated transaction price when it is probable that significant reversal of revenue recognized would not occur when the uncertainty associated with variable consideration is subsequently resolved. These estimates are based on the amount of consideration that the Company expects to be entitled to.

Shipping and handling costs billed to customers are included in sales and the related costs are included in cost of sales when control transfers to the customer. The Company presents amounts collected from customers for sales and other taxes net of the related amounts remitted.

Subscriber System Assets, Dealer Intangibles and Related Deferred Revenue Accounts

The Company considers assets related to the acquisition of new customers in its electronic security business in three asset categories:

- Internally generated residential subscriber systems outside of North America
- Internally generated commercial subscriber systems (collectively referred to as subscriber system assets)
- Customer accounts acquired through the ADT dealer program, primarily outside of North America (referred to as dealer intangibles)

Subscriber system assets include installed property, plant and equipment for which the Company retains ownership and deferred costs directly related to the customer acquisition and system installation. Subscriber system assets represent capitalized equipment (e.g. security control panels, touch pad, motion detectors, window sensors, and other equipment) and installation costs associated with electronic security monitoring arrangements under which the Company retains ownership of the security system assets in a customer's place of business, or outside of North America, residence. Installation costs represent costs incurred to prepare the asset for its intended use. The Company pays property taxes on the subscriber system assets and upon customer termination, may retrieve such assets. These assets embody a probable future economic benefit as they generate future monitoring revenue for the Company.

Costs related to the subscriber system equipment and installation are categorized as property, plant and equipment rather than deferred costs. Deferred costs associated with subscriber system assets represent direct and incremental selling expenses (such as commissions) related to acquiring the customer. Commissions related to up-front consideration paid by customers in connection with the establishment of the monitoring arrangement are determined based on a percentage of the up-front fees and do not exceed deferred revenue. Such deferred costs are recorded as other current and noncurrent assets within the consolidated statements of financial position.

Subscriber system assets and any deferred revenue resulting from the customer acquisition are accounted for over the expected life of the subscriber. In certain geographical areas where the Company has a large number of customers that behave in a similar manner over time, the Company accounts for subscriber system assets and related deferred revenue using pools, with separate pools for the components of subscriber system assets and any related deferred revenue based on the same month and year of acquisition. Pooled subscriber system assets and related deferred revenue are depreciated using a straight-line method with lives up to 12 years and considering customer attrition. Non-pooled subscriber systems (primarily in Europe, Latin America and Asia) and related deferred revenue are depreciated using a straight-line method with a 15-year life, with remaining balances written off upon customer termination.

Certain contracts and related customer relationships result from purchasing residential security monitoring contracts from an external network of independent dealers who operate under the ADT dealer program, primarily outside of North America. Acquired contracts and related customer relationships are recorded at their contractually determined purchase price.

During the first 6 months (12 months in certain circumstances) after the purchase of the customer contract, any cancellation of monitoring service, including those that result from customer payment delinquencies, results in a chargeback by the Company to the dealer for the full amount of the contract purchase price. The Company records the amount charged back to the dealer as a reduction of the previously recorded intangible asset.

Intangible assets arising from the ADT dealer program described above are amortized in pools determined by the same month and year of contract acquisition on a straight-line basis over the period of the customer relationship. The estimated useful life of dealer intangibles ranges from 12 to 15 years.

Research and Development Costs

Expenditures for research activities relating to product development and improvement are charged against income as incurred and included within selling, general and administrative expenses in the consolidated statements of income. Such expenditures for the years ended September 30, 2022, 2021 and 2020 were $295 million, $275 million and $274 million, respectively.

Stock-Based Compensation

Restricted (Non-vested) Stock /Units

Restricted stock and restricted stock units are typically settled in shares for employees in the U.S. and in cash for employees not in the U.S. Restricted awards typically vest over a period of three years from the grant date. The Company's Compensation and Talent Development Committee may approve different vesting terms on specific grants. The fair value of each share-settled restricted award is based on the closing market value of the Company’s ordinary shares on the date of grant. The fair value of each cash-settled restricted award is recalculated at the end of each reporting period based on the closing market value of the Company's ordinary shares at the end of the reporting period, and the liability and expense are adjusted based on the new fair value.

Performance Share Awards

Performance-based share unit ("PSU") awards are generally contingent on the achievement of predetermined performance goals over a performance period of one to three years and on the award holder's continuous employment until the vesting date. The majority of PSUs are also indexed to the achievement of specified levels of total shareholder return versus a peer group over the performance period.

Upon completion of the performance period, earned PSUs are typically settled with shares of the Company's ordinary shares for employees in the U.S. and in cash for employees not in the U.S.

The fair value of the portion of the PSU which is linked to the achievement of performance goals is based on the closing market value of the Company's ordinary shares on the date of grant. Share-based compensation expense for these PSUs is recognized over the performance period based on the probability of achieving the performance targets.

The fair value of the portion of the PSU that is indexed to total shareholder return is estimated on the date of grant using a Monte Carlo simulation that uses the following assumptions:

- The risk-free interest rate for periods during the contractual life of the PSU is based on the U.S. Treasury yield curve in effect at the time of grant.
- The expected volatility is based on the historical volatility of the Company's stock over the most recent three-year period as of the grant date.

Share-based compensation expense for PSUs which are indexed to total shareholder return is not adjusted for changes in performance subsequent to the grant date because the likelihood of achieving the market condition is incorporated in the grant date fair value of the award.

Stock Options

Stock options are granted with an exercise price equal to the market price of the Company’s stock at the date of grant. Stock option awards typically vest between two and three years after the grant date and expire ten years from the grant date.

The fair value of each option is estimated on the date of grant using a Black-Scholes option valuation model that uses the following assumptions:

- The expected life of options represents the period of time that options granted are expected to be outstanding.
- The risk-free interest rate for periods during the contractual life of the option is based on the U.S. Treasury yield curve in effect at the time of grant.
- Expected volatility is based on the historical volatility of the Company's stock since October 2016 blended with the historical volatility of certain peer companies' stock prior to October 2016 over the most recent period corresponding to the expected life as of the grant date.
- The expected dividend yield is based on the expected annual dividend as a percentage of the market value of the Company’s ordinary shares as of the grant date.

The Company uses historical data to estimate option exercises and employee terminations within the valuation model.

Stock Appreciation Rights

SARs vest under the same terms and conditions as stock option awards, but are settled in cash for the difference between the market price on the date of exercise and the exercise price. As a result, SARs are recorded in the Company’s consolidated statements of financial position as a liability until the date of exercise.

The fair value of each SAR award is estimated using a similar method to that used for stock options. The fair value of each SAR award is recalculated at the end of each reporting period and the liability and expense are adjusted based on the new fair value.

Amounts related to SARs are not material.

Earnings Per Share

The Company presents both basic and diluted earnings per share ("EPS") amounts. Basic EPS is calculated by dividing net income attributable to Johnson Controls by the weighted average number of ordinary shares outstanding during the reporting period. Diluted EPS is calculated by dividing net income attributable to Johnson Controls by the weighted average number of ordinary shares and ordinary equivalent shares outstanding during the reporting period that are calculated using the treasury stock method for stock options, unvested restricted stock and unvested performance share awards. The treasury stock method assumes that the Company uses the proceeds from the exercise of stock option awards to repurchase ordinary shares at the average market price during the period. The assumed proceeds under the treasury stock method include the purchase price that the grantee will pay in the future and compensation cost for future service that the Company has not yet recognized. For unvested restricted stock and unvested performance share awards, assumed proceeds under the treasury stock method include unamortized compensation cost.

Foreign Currency Translation

Substantially all of the Company’s international operations use the respective local currency as the functional currency. Assets and liabilities of international entities have been translated at period-end exchange rates, and income and expenses have been translated using average exchange rates for the period. Monetary assets and liabilities denominated in non-functional currencies are adjusted to reflect period-end exchange rates. Aggregate transaction gains (losses), net of the impact of foreign currency hedges, for the years ended September 30, 2022, 2021 and 2020 were $49 million, $56 million and $(32) million, respectively.

Derivative Financial Instruments

The Company has written policies and procedures that place all financial instruments under the direction of Corporate treasury and restrict all derivative transactions to those intended for hedging purposes. The use of financial instruments for speculative purposes is strictly prohibited. The Company selectively uses financial instruments to manage the market risk from changes in foreign exchange rates, commodity prices, stock-based compensation liabilities and interest rates.

The fair values of all derivatives are recorded in the consolidated statements of financial position. The change in a derivative’s fair value is recorded each period in current earnings or accumulated other comprehensive income ("AOCI"), depending on whether the derivative is designated as part of a hedge transaction and if so, the type of hedge transaction.

Investments

Investments in debt and equity securities are are marked to market at the end of each accounting period. Unrealized gains and losses on these securities are recognized in the Company's consolidated statements of income. The deferred compensation plan assets are marked to market at the end of each accounting period and all unrealized gains and losses are recorded in the consolidated statements of income.

Pension and Postretirement Benefits

The Company utilizes a mark-to-market approach for recognizing pension and postretirement benefit expenses, including measuring the market related value of plan assets at fair value and recognizing actuarial gains and losses in the fourth quarter of each fiscal year or at the date of a remeasurement event.

Loss Contingencies

Accruals are recorded for various contingencies including legal proceedings, environmental matters, self-insurance and other claims that arise in the normal course of business. The accruals are based on judgment, the probability of losses and, where applicable, the consideration of opinions of internal and/or external legal counsel and actuarially determined estimates. Additionally, the Company records receivables from third party insurers when recovery has been determined to be probable.

The Company is subject to laws and regulations relating to protecting the environment. Expenses associated with environmental remediation obligations are recognized when such amounts are probable and can be reasonably estimated.

Liabilities and expenses for workers' compensation, product, general and auto liabilities is dependent on claims experience. For most of these liabilities, claims incurred but not yet reported are estimated by utilizing actuarial valuations based upon historical claims experience. Receivables from third party insurers are recorded when recovery has been determined to be probable. The Company maintains captive insurance companies to manage its insurable liabilities.

Asbestos-Related Contingencies and Insurance Receivables

The Company and certain of its subsidiaries, along with numerous other companies, are named as defendants in personal injury lawsuits based on alleged exposure to asbestos-containing materials. The estimated liability and corresponding insurance recovery for pending and future claims and defense costs is based on the Company's historical claim experience, and estimates of the number and resolution cost of potential future claims that may be filed and is discounted to present value from 2068 (which is the Company's reasonable best estimate of the actuarially determined time period through which asbestos-related claims will be filed against its affiliates). Estimated asbestos-related defense costs are included in the asbestos liability. The Company's legal strategy for resolving claims also impacts these estimates. The Company considers various trends and developments in evaluating the period of time (the look-back period) over which historical claim and settlement experience is used to estimate and value claims reasonably projected to be made through 2068. At least annually, the Company assesses the sufficiency of its estimated liability for pending and future claims and defense costs by evaluating actual experience regarding claims filed, settled and dismissed, and amounts paid in settlements. In addition to claims and settlement experience, the Company considers additional quantitative and qualitative factors such as changes in legislation, the legal environment, and the Company's defense strategy. The Company also evaluates the recoverability of its insurance receivable on an annual basis. The Company evaluates all of these factors and determines whether a change in the estimate of its liability for pending and future claims and defense costs or insurance receivable is warranted.

In connection with the recognition of liabilities for asbestos-related matters, the Company records asbestos-related insurance recoveries that are probable. Estimated asbestos-related insurance recoveries represents estimated amounts due to the Company for previously paid and settled claims and the probable reimbursements relating to its estimated liability for pending and future claims discounted to present value. In determining the amount of insurance recoverable, the Company considers available insurance, allocation methodologies, solvency and creditworthiness of the insurers.

Income Taxes

Deferred tax liabilities and assets are recognized for the expected future tax consequences of events that have been reflected in the consolidated financial statements. Deferred tax liabilities and assets are determined based on the differences between the book and tax basis of particular assets and liabilities and operating loss carryforwards, using tax rates in effect for the years in which the differences are expected to reverse. A valuation allowance is provided to reduce the carrying or book value of deferred tax assets if, based upon the available evidence, including consideration of tax planning strategies, it is more-likely-than-not that some or all of the deferred tax assets will not be realized.

Retrospective Changes

Effective October 1, 2021, the Company's marine businesses, which were previously included in the Building Solutions Asia Pacific and Global Products segments, became part of the Building Solutions EMEA/LA segment. Historical information has been re-cast to present the comparative periods on a consistent basis. This change was not material to the segment presentation.

New Accounting Pronouncements

Recently Adopted Accounting Pronouncements

In October 2021, the FASB issued ASU No. 2021-08, “Business Combinations (Topic 805), Accounting for Contract Assets and Contract Liabilities from Contracts with Customers,” which requires contract assets and contract liabilities (e.g. deferred revenue) acquired in a business combination to be recognized and measured by the acquirer on the acquisition date in accordance with ASC 606, “Revenue from Contracts with Customers.” Generally, this new guidance will result in the acquirer recognizing contract assets and contract liabilities at the same amounts recorded by the acquiree. Historically, such amounts were recognized by the acquirer at fair value in acquisition accounting. The guidance is applied prospectively to acquisitions occurring on or after the effective date. The Company early adopted ASU No. 2021-08 at the beginning of fiscal 2022. The adoption of the new standard did not have a material impact on the Company's consolidated financial statements.

Recently Issued Accounting Pronouncements

In September 2022, the FASB issued ASU 2022-04, "Disclosure of Supplier Finance Program Obligations", which is intended to enhance the transparency surrounding the use of supplier finance programs. Supplier finance programs may also be referred to as reverse factoring, payables finance, or structured payables arrangements. The amendments require a buyer that uses supplier finance programs to make annual disclosures about the program’s key terms, the balance sheet presentation of related amounts, the confirmed amount outstanding at the end of the period, and associated rollforward information. Only the amount outstanding at the end of the period must be disclosed in interim periods. The Company expects to adopt the new disclosures, other than the rollforward disclosure, as required at the beginning of fiscal 2024. The rollforward disclosures will be adopted as required at the beginning of fiscal 2025.

Other recently issued accounting pronouncements are not expected to have a material impact on the Company's consolidated financial statements.

2. ACQUISITIONS AND DIVESTITURES

During fiscal 2022, the Company acquired several businesses for a combined purchase price, net of cash acquired, of $323 million, of which $269 million was paid as of September 30, 2022. Intangible assets associated with these acquisitions totaled $123 million and primarily relate to customer relationships and technology. In connection with these acquisitions, the Company recorded goodwill of $194 million, of which $68 million was assigned to the Building Solutions EMEA/LA segment, $45 million was assigned to the Global Products segment, $44 million was assigned to the Building Solutions APAC segment and $36 million was assigned to the Building Solutions North America segment.

Silent-Aire Acquisition

In May 2021, the Company completed its acquisition of Silent-Aire, a global leader in hyperscale data center cooling and modular critical infrastructure solutions, for approximately $755 million, net of cash acquired, which was comprised of an upfront net cash payment of approximately $661 million, the estimated fair value at the acquisition date of contingent earn-out liabilities of approximately $86 million and a working capital adjustment of $8 million. The contingent earn-out liabilities are based upon the achievement of certain defined operating results in each of the three years following the acquisition, with a maximum payout of approximately $250 million. The fair value of contingent earn-out liabilities is reassessed on a quarterly basis and could differ materially from the initial estimates. Subsequent changes in the estimated fair value of contingent earn-out liabilities are recorded in the consolidated statements of income when incurred. Earn-out payments that are less than or equal to the contingent earn-out liabilities on the acquisition date are reflected as financing cash outflows and amounts paid in excess of the contingent earn-out liabilities on the acquisition date are reflected as operating cash outflows. During the year ended September 30, 2022, the Company recorded a reduction in the fair value of the contingent earn-out liability of $43 million. No earn-out payments were made for the first twelve-month earn-out period ended April 30, 2022 as the performance measures for the period were not achieved.

In connection with the acquisition, the Company recorded goodwill of $244 million in the Global Products segment. Goodwill is attributable primarily to expected synergies, expanded market opportunities and other benefits that the Company believes will result from combining its operations with the operations of Silent-Aire. The goodwill created in the acquisition is not deductible for tax purposes.

The original fair values of the assets acquired and liabilities assumed related to Silent-Aire are as follows (in millions):

Cash and cash equivalents	$	5
Accounts receivable		141
Inventories		60
Other current assets		4
Property, plant, and equipment - net		33
Goodwill		244
Intangible assets - net		497
Other noncurrent assets		84
Total assets acquired		1,068
Accounts payable		62
Accrued compensation and benefits		6
Deferred revenue		32
Other current liabilities		12
Other noncurrent liabilities		196
Total liabilities acquired		308
Net assets acquired	$	760

The purchase price allocation to identifiable intangible assets acquired related to Silent-Aire is as follows:

	Fair Value (in millions)	Weighted Average Life (in years)
Customer relationships	$ 291	19
Technology	116	13
Other definite-lived intangibles	23	1
Indefinite-lived trademarks	67	
Total identifiable intangible assets	$ 497	

Other acquisitions and divestitures were not material individually or in the aggregate in fiscal 2021 and 2020.

3. ASSETS AND LIABILITIES HELD FOR SALE & DISCONTINUED OPERATIONS

Assets and Liabilities Held for Sale

During fiscal 2022, the Company determined that its Global Retail business within its Building Solutions North America, Building Solutions Asia Pacific and Building Solutions EMEA/LA segments and a business within the Building Solutions Asia Pacific segment both met the criteria to be classified as held for sale. The assets and liabilities of both businesses are presented as held for sale in the consolidated statements of financial position as of September 30, 2022. Assets and liabilities held for sale are recorded at the lower of carrying value or fair value, less costs to sell in accordance with ASC 360-10-15, "Impairment or Disposal of Long-Lived Assets". The carrying amount of any assets, including goodwill, that are part of the disposal group, but not in the scope of ASC 360-10, are tested for impairment under the relevant guidance prior to measuring the disposal group at fair value, less cost to sell.

As a result of classifying the Global Retail business as held for sale, during the year ended September 30, 2022, the Company recorded impairment charges of $235 million to write down goodwill related to its North America Retail reporting unit and $86 million to write down the disposal group to its estimated fair value, less costs to sell. The Company also fully impaired $38 million of internal-use software projects that were no longer probable of being completed. Refer to Note 8, "Goodwill and Other Intangible Assets," of the notes to the consolidated financial statements for further information regarding the goodwill impairment charge.

An additional $60 million was recorded in the year ended September 30, 2022 to write down the business classified as held for sale in the Building Solutions Asia Pacific segment to its estimated fair value, less costs to sell.

All of the impairments were recorded within restructuring and impairment costs in the consolidated statements of income. The divestiture of the businesses held for sale could result in a gain or loss on sale to the extent the ultimate selling prices differ from the current carrying value of the net assets recorded, which could be material. The businesses did not meet the criteria to be classified as discontinued operations as neither divestiture represents a strategic shift that will have a major effect on the Company's operations and financial results.

The following table summarizes the carrying value of the Global Retail assets and liabilities held for sale (in millions):

	September 30, 2022
Accounts receivable - net	$ 199
Inventories	155
Other current assets	21
Current assets held for sale	$ 375
Property, plant and equipment - net	$ 89
Goodwill	22
Other intangible assets - net	514
Other noncurrent assets	72
Noncurrent assets held for sale	$ 697
Accounts payable	$ 127
Accrued compensation and benefits	25
Deferred revenue	36
Other current liabilities	33
Current liabilities held for sale	$ 221
Other noncurrent liabilities	$ 61
Noncurrent liabilities held for sale	$ 61

During the third quarter of fiscal 2020, the Company determined that certain assets of the Building Solutions Asia Pacific segment met the criteria to be classified as held for sale. During the fourth quarter of fiscal 2022, the Company determined that these assets no longer met the criteria to be classified as held for sale as the Company can no longer assert that the sale of the assets is probable within a year due to the real estate market downturn in China that has worsened in the period after the COVID-19 lockdowns. As a result, the Company reclassified the held for sale assets to held and used as of September 30, 2022. Upon reclassification, an impairment of $45 million was recorded within restructuring and impairment costs in the consolidated statements of income to adjust the asset to the lower of its carrying value adjusted for depreciation and the fair value of the asset as of September 30, 2022.

Discontinued Operations

The Company completed the sale of its Power Solutions business on April 30, 2019. In December 2020, the favorable resolution of certain post-closing working capital and net debt adjustments resulted in income from discontinued operations of $124 million, net of tax of $26 million, due to a reversal of a reserve established in connection with the sale.

There was no Power Solutions related activity in fiscal 2022 and 2020.

4. REVENUE RECOGNITION

Disaggregated Revenue

The following table presents the Company's revenues disaggregated by segment and by products and systems versus services revenue (in millions):

	Year Ended September 30,					
	2022			2021		
	Products & Systems	Services	Total	Products & Systems	Services	Total
Building Solutions North America	$ 5,708	$ 3,659	$ 9,367	$ 5,312	$ 3,373	$ 8,685
Building Solutions EMEA/LA	2,188	1,657	3,845	1,929	1,955	3,884
Building Solutions Asia Pacific	2,005	709	2,714	1,478	1,138	2,616
Global Products	9,373	—	9,373	8,483	—	8,483
Total	$ 19,274	$ 6,025	$ 25,299	$ 17,202	$ 6,466	$ 23,668

The following table presents further disaggregation of Global Products revenues by product type (in millions):

	Year Ended September 30,	
	2022	2021
HVAC	$ 6,756	$ 6,054
Fire & Security	2,367	2,192
Industrial Refrigeration	250	237
Total	$ 9,373	$ 8,483

Contract Balances

Contract assets relate to the Company’s right to consideration for performance obligations satisfied but not billed and consist of unbilled receivables and costs in excess of billings. Contract liabilities relate to customer payments received in advance of satisfaction of performance obligations under the contract. Contract balances are classified as assets or liabilities on a contract-by-contract basis at the end of each reporting period.

The following table presents the location and amount of contract balances in the Company's consolidated statements of financial position (in millions):

		September 30,	
	Location of contract balances	2022	2021
Contract assets - current	Accounts receivable - net	$ 2,020	$ 1,718
Contract assets - noncurrent	Other noncurrent assets	79	99
Contract liabilities - current	Deferred revenue	(1,768)	(1,637)
Contract liabilities - noncurrent	Other noncurrent liabilities	(282)	(269)

The Company recognized revenue that was included in the beginning of period contract liability balance of approximately $1.5 billion and $1.2 billion for the years ended September 30, 2022 and 2021, respectively.

Performance Obligations

A performance obligation is a distinct good, service, or bundle of goods and services promised in a contract. A contract’s transaction price is allocated to each distinct performance obligation and recognized as revenue when, or as, the performance obligation is satisfied. When contracts with customers require significant and complex integration, contain goods or services which are highly interdependent or interrelated, or are goods or services which significantly modify or customize other promises in the contracts and, therefore, are not distinct, then the entire contract is accounted for as a single performance obligation. For any contracts with multiple performance obligations, the contract’s transaction price is allocated to each performance obligation based on the estimated relative standalone selling price of each distinct good or service in the contract. For product sales, each product sold to a customer typically represents a distinct performance obligation.

Performance obligations are satisfied as of a point in time or over time. The timing of satisfying the performance obligation is typically indicated by the terms of the contract. As of September 30, 2022, the aggregate amount of the transaction price allocated to remaining performance obligations was approximately $17.5 billion, of which approximately 65% is expected to be recognized as revenue over the next two years. The remaining performance obligations expected to be recognized in revenue beyond two years primarily relate to large, multi-purpose contracts to construct hospitals, schools and other governmental buildings, which include services to be performed over the building's lifetime, with average initial contract terms of 25 to 35 years. Future contract modifications could affect both the timing and the amount of the remaining performance obligations. The Company excludes the value of remaining performance obligations for contracts with an original expected duration of one year or less.

Costs to Obtain or Fulfill a Contract

The Company recognizes the incremental costs incurred to obtain or fulfill a contract with a customer as an asset when these costs are recoverable. These costs consist primarily of sales commissions and bid/proposal costs. Costs to obtain or fulfill a contract are capitalized and amortized to revenue over the period of contract performance.

The following table presents the location and amount of costs to obtain or fulfill a contract recorded in the Company's consolidated statements of financial position (in millions):

	September 30,	
	2022	2021
Other current assets	$ 139	$ 149
Other noncurrent assets	174	117
Total	$ 313	$ 266

Amortization related to costs to obtain or fulfill a contract were $191 million and $173 million during the years ended September 30, 2022 and 2021, respectively. There were no impairment losses recognized in the year ended September 30, 2022 or 2021.

5. ACCOUNTS RECEIVABLE

Accounts receivable, net consisted of the following (in millions):

	September 30,	
	2022	2021
Accounts receivable	$ 5,590	$ 5,723
Less: Allowance for expected credit losses	(62)	(110)
Accounts receivable, net	$ 5,528	$ 5,613

The changes in the allowance for expected credit losses related to accounts receivable were as follows (in millions):

	Year Ended September 30, 2022	
	2022	2021
Balance at beginning of period	$ 110	$ 173
Benefit for expected credit losses	(2)	(3)
Write-offs charged against the allowance for expected credit losses	(38)	(65)
Currency translation	(3)	1
Other	(5)	4
Balance at end of period	$ 62	$ 110

The Company sold receivables where it collected customer payments related to the factored receivables on behalf of the financial institution but otherwise maintained no continuing involvement totaling $1,115 million and $129 million during the years ended September 30, 2022 and 2021, respectively. The costs of factoring such receivables were not material. Outstanding receivables sold under the factoring agreements were $476 million as of September 30, 2022 and $127 million as of September 30, 2021.

6. INVENTORIES

Inventories consisted of the following (in millions):

	September 30, 2022	September 30, 2021
Raw materials and supplies	$ 1,009	$ 769
Work-in-process	196	166
Finished goods	1,305	1,122
Inventories	$ 2,510	$ 2,057

7. PROPERTY, PLANT AND EQUIPMENT

Property, plant and equipment consisted of the following (in millions):

	September 30, 2022	September 30, 2021
Buildings and improvements	$ 1,300	$ 1,313
Subscriber systems	733	802
Machinery and equipment	3,550	3,669
Construction in progress	512	500
Land	196	231
Total property, plant and equipment	6,291	6,515
Less: Accumulated depreciation	(3,249)	(3,287)
Property, plant and equipment - net	$ 3,042	$ 3,228

8. GOODWILL AND OTHER INTANGIBLE ASSETS

Effective October 1, 2021, the Company's marine businesses previously included in the Building Solutions Asia Pacific and Global Products reportable segments became part of the Building Solutions EMEA/LA reportable segment. Historical information has been re-cast to present the comparative periods on a consistent basis. This change was not material to the segment presentation or the allocation of goodwill.

The changes in the carrying amount of goodwill in each of the Company's reportable segments were as follows (in millions):

	September 30, 2020	Business Acquisitions	Business Divestitures	Impairments	Currency Translation and Other	September 30, 2021
Building Solutions North America	$ 9,160	$ 21	$ —	$ —	$ 34	$ 9,215
Building Solutions EMEA/LA	1,987	35	—	—	19	2,041
Building Solutions Asia Pacific	1,223	—	(7)	—	21	1,237
Global Products	5,562	244	—	—	36	5,842
Total	$ 17,932	$ 300	$ (7)	$ —	$ 110	$ 18,335

	September 30, 2021	Business Acquisitions	Business Divestitures [1]	Impairments	Currency Translation and Other	September 30, 2022
Building Solutions North America	$ 9,215	$ 37	$ —	$ (235)	$ (46)	$ 8,971
Building Solutions EMEA/LA	2,041	78	(98)	—	(296)	1,725
Building Solutions Asia Pacific	1,237	44	(29)	—	(136)	1,116
Global Products	5,842	60	—	(75)	(311)	5,516
Total	$ 18,335	$ 219	$ (127)	$ (310)	$ (789)	$ 17,328

[1] Business divestitures include $93 million and $29 million of goodwill within the Building Solutions EMEA/LA and Building Solutions Asia Pacific reportable segments, respectively, transferred to noncurrent assets held for sale on the consolidated statements of financial position.

As of September 30, 2022, the accumulated impairment loss totaled $781 million, of which $659 million related to the Building Solutions North America segment, $75 million related to the Global Products segment and $47 million related to the Building Solutions EMEA/LA segment.

As of September 30, 2021 and 2020, the accumulated impairment loss totaled $471 million, of which $424 million related to the Building Solutions North America segment and $47 million related to the Building Solutions EMEA/LA segment.

The Company reviews goodwill for impairment annually as of July 31 or more frequently if events or changes in circumstances indicate the asset might be impaired. During its fiscal 2022 annual impairment test, the Company determined that its Silent-Aire reporting unit's goodwill was impaired. As a result, the Company recorded a non-cash impairment charge of $75 million within restructuring and impairment costs in the consolidated statements of income in the fourth quarter of fiscal 2022, which was determined by comparing the carrying amount of the reporting unit to its fair value. The Silent-Aire reporting unit has a remaining goodwill balance of $183 million at September 30, 2022. The Company used a discounted cash flow model to estimate the fair value of the reporting unit. The primary assumptions used in the model were management's internal projections of future cash flows, the weighted-average cost of capital and long-term growth rates, which are classified as Level 3 inputs within the fair value hierarchy as defined in ASC 820, "Fair Value Measurement." Although the Company's cash flow forecasts are based on assumptions that are considered reasonable by management and consistent with the plans and estimates management is using to operate the underlying business, there was significant judgment in determining the expected future cash flows attributable to the Silent-Aire reporting unit. Other than the Silent-Aire reporting unit that is recorded at fair value, no other reporting unit was determined to be at risk of failing the goodwill impairment test.

In the second quarter of fiscal 2022, the Company concluded it had a triggering event requiring assessment of goodwill impairment for its North America Retail reporting unit in conjunction with classifying its Global Retail business as held for sale. Refer to Note 3, "Discontinued Operations & Assets and Liabilities Held for Sale," of the notes to the consolidated financial statements for further disclosure related to the Global Retail assets held for sale. As a result, the Company recorded a non-cash impairment charge of $235 million within restructuring and impairment costs in the consolidated statements of income in the second quarter of fiscal 2022. The North America Retail reporting unit has no remaining goodwill balance as of September 30, 2022. The Company used the market approach to estimate the fair value of the reporting unit based on the relative estimated sales proceeds for the planned disposal of the Global Retail business attributable to the North America Retail reporting unit. The inputs utilized in the analysis are classified as Level 3 inputs within the fair value hierarchy as defined in ASC 820, "Fair Value Measurement."

There were no other triggering events requiring that an impairment assessment be conducted in fiscal 2022.

There were no goodwill impairments resulting from the fiscal 2021 and the fiscal 2020 annual impairment test and no reporting unit was determined to be at risk of failing the goodwill impairment test as of September 30, 2021.

During fiscal 2020, the Company considered the deterioration in general economic and market conditions due to the COVID-19 pandemic and its impact on each of the Company's reporting units' performance. Due to declines in cash flow projections of the North America Retail reporting unit in the third quarter of fiscal 2020 as a result of the COVID-19 pandemic, the Company concluded a triggering event occurred requiring assessment of impairment for its North America Retail reporting unit. As a result, the Company recorded a non-cash impairment charge of $424 million within restructuring and impairment costs in the consolidated statements of income in the third quarter of fiscal 2020. The North America Retail reporting unit had a remaining goodwill balance of $235 million at September 30, 2021. The Company used a discounted cash flow model to estimate the fair value of the reporting unit. The primary assumptions used in the model were management's internal projections of future cash flows, the weighted-average cost of capital and long-term growth rates, which are classified as Level 3 inputs within the fair value hierarchy as defined in ASC 820, "Fair Value Measurement."

The Company's other intangible assets, primarily from business acquisitions, consisted of (in millions):

	September 30,					
	2022			2021		
	Gross Carrying Amount	Accumulated Amortization	Net	Gross Carrying Amount	Accumulated Amortization	Net
Definite-lived intangible assets						
Technology	$ 1,353	$ (658)	$ 695	$ 1,464	$ (629)	$ 835
Customer relationships	2,742	(1,254)	1,488	3,097	(1,191)	1,906
Miscellaneous	756	(386)	370	750	(354)	396
	4,851	(2,298)	2,553	5,311	(2,174)	3,137
Indefinite-lived intangible assets						
Trademarks/tradenames	2,088	—	2,088	2,332	—	2,332
Miscellaneous	—	—	—	80	—	80
	2,088	—	2,088	2,412	—	2,412
Total intangible assets	$ 6,939	$ (2,298)	$ 4,641	$ 7,723	$ (2,174)	$ 5,549

The Company reviews indefinite-lived intangible assets for impairment during the fourth fiscal quarter or more frequently if events or changes in circumstances indicate the asset might be impaired.

There were no indefinite-lived intangible asset impairments resulting from the fiscal 2022, 2021 and 2020 annual impairment tests. However, it is possible that future changes in circumstances would require the Company to record non-cash impairment charges. For fiscal 2022, the estimated fair values of all indefinite-lived intangibles substantially exceeded their carrying values, with the exception of the indefinite-lived trademarks related to the Company's Asia Pacific subscriber business. The estimated fair value for the Asia Pacific indefinite-lived trademark was consistent with its carrying value of $54 million.

During the second and third quarters of fiscal 2020, the Company determined that it had a triggering event at each reporting period end requiring assessment of impairment for certain of its indefinite-lived intangible assets due to declines in revenue directly attributable to the COVID-19 pandemic. As a result, the Company recorded an impairment charge of $62 million related primarily to the Company's retail business indefinite-lived intangible assets within restructuring and impairment costs in the consolidated statements of income in the second quarter of fiscal 2020. No further impairment was required to be recorded in the third quarter of fiscal 2020 as a result of the completed impairment assessment.

Amortization of other intangible assets included within continuing operations for the years ended September 30, 2022, 2021 and 2020 was $427 million, $435 million and $386 million, respectively.

The following table summarizes the expected amortization of definite-lived intangible assets, excluding the impact of future acquisitions, by year (in millions):

2023	$	414
2024		406
2025		382
2026		317
2027		282

9. LEASES

The following table presents the Company's lease costs (in millions):

	Year Ended September 30,		
	2022	2021	2020
Operating lease cost	$ 352	$ 384	$ 399
Variable lease cost	165	130	145
Total lease costs	$ 517	$ 514	$ 544

The following table presents supplemental consolidated statement of financial position information (in millions):

		September 30,	
	Location of lease balances	2022	2021
Operating lease right-of-use assets	Other noncurrent assets	$ 1,271	$ 1,376
Operating lease liabilities - current	Other current liabilities	280	319
Operating lease liabilities - noncurrent	Other noncurrent liabilities	987	1,055
Weighted-average remaining lease term		7 years	7 years
Weighted-average discount rate		2.1 %	1.8 %

The following table presents supplemental cash flow information related to operating leases (in millions):

	Year Ended September 30,		
	2022	2021	2020
Cash paid for amounts included in the measurement of lease liability:			
Operating cash outflows from operating leases	$ 367	$ 398	$ 397
Noncash operating lease activity:			
Right-of-use assets obtained in exchange for operating lease liabilities	369	515	467

The following table presents maturities of operating lease liabilities (in millions):

	September 30, 2022
2023	$ 301
2024	269
2025	203
2026	149
2027	109
After 2027	345
Total operating lease payments	1,376
Less: Interest	(109)
Present value of lease payments	$ 1,267

10. DEBT AND FINANCING ARRANGEMENTS

Short-term debt consisted of the following (in millions):

	September 30,	
	2022	2021
Bank borrowings	$ 10	$ 8
Commercial paper	172	—
Term loans	487	—
	$ 669	$ 8
Weighted average interest rate on short-term debt outstanding	0.5 %	0.2 %

As of September 30, 2022, the Company had a syndicated $2.5 billion committed revolving credit facility, which is scheduled to expire in December 2024, and a syndicated $500 million committed revolving credit facility, which is scheduled to expire in December 2022. There were no draws on the facilities as of September 30, 2022.

Long-term debt consisted of the following (in millions; due dates by fiscal year):

	September 30, 2022	September 30, 2021
Unsecured notes		
JCI plc - Term Loan -¥25 billion; LIBOR JPY plus 0.40% due in 2022	$ —	$ 223
JCI plc - 4.625% due in 2023 ($25 million par value)	25	25
Tyco International Finance S.A. ("TIFSA") - 4.625% due in 2023 ($7 million par value)	7	7
JCI plc - 1.00% due in 2023 (€846 million par value)	830	980
JCI plc - 3.625% due in 2024 ($453 million par value)	453	453
JCI Inc. - 3.625% due in 2024 ($31 million par value)	31	31
JCI plc - 1.375% due in 2025 (€423 million par value)	419	496
TIFSA - 1.375% due in 2025 (€54 million par value)	53	63
JCI plc - 3.90% due in 2026 ($487 million par value)	505	510
TIFSA - 3.90% due in 2026 ($51 million par value)	51	51
JCI plc - Term Loan - ¥30 billion; TORF plus 0.40% due in 2027	208	—
JCI plc and Tyco Fire & Security Finance S.C.A. ("TFSCA") - 0.375% due in 2027 (€500 million par value)	488	577
JCI plc and TFSCA - 3.00% due in 2028 (€600 million par value)	586	—
JCI plc and TFSCA - 1.75% due in 2030 ($625 million par value)	623	623
JCI plc and TFSCA - 2.00% due in 2031 ($500 million par value)	496	496
JCI plc and TFSCA - 1.00% due in 2032 (€500 million par value)	489	578
JCI plc and TFSCA - 4.90% due in 2032 ($400 million par value)	394	—
JCI plc - 6.00% due in 2036 ($342 million par value)	339	339
JCI Inc. - 6.00% due in 2036 ($8 million par value)	8	8
JCI plc - 5.70% due in 2041 ($190 million par value)	189	189
JCI Inc. - 5.70% due in 2041 ($30 million par value)	30	30
JCI plc - 5.25% due in 2042 ($155 million par value)	155	155
JCI Inc. - 5.25% due in 2042 ($6 million par value)	6	6
JCI plc - 4.625% due in 2044 ($444 million par value)	441	441
JCI Inc. - 4.625% due in 2044 ($6 million par value)	6	6
JCI plc - 5.125% due in 2045 ($477 million par value)	557	560
TIFSA - 5.125% due in 2045 ($23 million par value)	23	22
JCI plc - 6.95% due in 2046 ($32 million par value)	32	32
JCI Inc. - 6.95% due in 2046 ($4 million par value)	4	4
JCI plc - 4.50% due in 2047 ($500 million par value)	496	496
JCI plc - 4.95% due in 2064 ($341 million par value)	340	340
JCI Inc. - 4.95% due in 2064 ($15 million par value)	15	15
Other	25	8
Gross long-term debt	8,324	7,764
Less: current portion	865	226
Less: debt issuance costs	33	32
Long-term debt	$ 7,426	$ 7,506

The following table presents maturities of long-term debt as of September 30, 2022 (in millions):

2023	$ 865
2024	485
2025	473
2026	557
2027	697
After 2027	5,247
Total	$ 8,324

As of September 30, 2022, the Company was in compliance with all financial covenants set forth in its credit agreements and the indentures governing its outstanding notes, and expects to remain in compliance for the foreseeable future.

Total interest paid on both short and long-term debt for the years ended September 30, 2022, 2021 and 2020 was $226 million, $242 million and $247 million, respectively.

Financing Arrangements

In November 2021, the Company entered into a €200 million ($196 million as of September 30, 2022) bank term loan which had an interest rate of EURIBOR plus 0.5% and was due in October 2022.

In March 2022, the Company entered into two bank term loans totaling €285 million ($280 million as of September 30, 2022) which both have an interest rate of EURIBOR plus 0.5% and are due in March 2023.

In September 2022, the Company and its wholly owned subsidiary, TFSCA issued €600 million ($589 million as of September 30, 2022) of bonds with an interest rate of 3.0%, which are due in September 2028 and $400 million of bonds with an interest rate of 4.9%, which are due in December 2032.

In September 2022, the Company repaid a ¥25 billion ($181 million) term loan and entered into a ¥30 billion ($208 million as of September 30, 2022) term loan which is due in September 2027. The new ¥30 billion loan has an interest rate of TORF plus 0.4%. The original ¥25 billion loan had an interest rate of LIBOR JPY plus 0.4%.

Net Financing Charges

The Company's net financing charges line item in the consolidated statements of income contained the following components (in millions):

	Year Ended September 30,		
	2022	2021	2020
Interest expense, net of capitalized interest costs	$ 225	$ 219	$ 240
Other financing charges	27	25	26
Interest income	(6)	(9)	(23)
Net foreign exchange results for financing activities	(33)	(29)	(12)
Net financing charges	$ 213	$ 206	$ 231

11. DERIVATIVE INSTRUMENTS AND HEDGING ACTIVITIES

Cash Flow Hedges

The Company has global operations and participates in foreign exchange markets to minimize its risk of loss from fluctuations in foreign currency exchange rates. The Company selectively hedges anticipated transactions that are subject to foreign exchange rate risk primarily using foreign currency exchange forward contracts. The Company hedges 70% to 90% of the notional amount of each of its known foreign exchange transactional exposures.

The Company selectively hedges anticipated transactions that are subject to commodity price risk, primarily using commodity hedge contracts, to minimize overall price risk associated with the Company's purchases of copper and aluminum in cases where commodity price risk cannot be naturally offset or hedged through supply base fixed price contracts. Commodity risks are systematically managed pursuant to policy guidelines. The maturities of the commodity hedge contracts coincide with the expected purchase of the commodities.

As cash flow hedges under ASC 815, "Derivatives and Hedging," the hedge gains or losses due to changes in fair value are initially recorded as a component of AOCI and are subsequently reclassified into earnings when the hedged transactions occur and affect earnings. These contracts were highly effective in hedging the variability in future cash flows attributable to changes in currency exchange rates during the years ended September 30, 2022 and 2021.

The Company had the following outstanding contracts to hedge forecasted commodity purchases (in metric tons):

	Volume Outstanding as of September 30,	
Commodity	2022	2021
Copper	3,629	2,656
Aluminum	6,758	5,159

The Company enters into forward-starting interest rate swaps in conjunction with anticipated note issuances. The following table summarizes forward-starting interest rate swaps and the related anticipated note issuances (in millions):

	Year Ended September 30,	
	2022	2021
US dollar denominated		
Forward-starting interest swaps	$ 300	$ 500
Anticipated note issuance	400	500
Euro denominated		
Forward-starting interest swap	€ 200	—
Anticipated note issuance	600	—

All of the forward-starting interest swaps were terminated when the anticipated notes were issued and none were outstanding at September 30, 2022. Accumulated amounts recorded in AOCI as of the date of the note issuance are amortized to interest expense over the life of the related note to reflect the difference between the swap's reference rate and the fixed rate of the note.

Net Investment Hedges

The Company enters into foreign currency denominated debt obligations to selectively hedge portions of its net investment in non-U.S. subsidiaries. The currency effects of the debt obligations are reflected in the AOCI account within shareholders' equity attributable to Johnson Controls ordinary shareholders where they offset currency gains and losses recorded on the Company's net investments globally.

The following table summarizes net investment hedges (in billions):

	September 30,	
	2022	2021
Euro-denominated bonds designated as net investment hedges in Europe	€ 2.9	€ 2.3
Yen-denominated debt designated as a net investment hedge in Japan	¥ 30	¥ 25

Derivatives Not Designated as Hedging Instruments

The Company selectively uses equity swaps to reduce market risk associated with certain of its stock-based compensation plans, such as its deferred compensation plans. These equity compensation liabilities increase as the Company's stock price increases and decrease as the Company's stock price decreases. In contrast, the value of the swap agreement moves in the opposite direction of these liabilities, allowing the Company to fix a portion of the liabilities at a stated amount. The Company hedged approximately 0.3 million ordinary shares, which had a cost basis of $23 million, as of September 30, 2021. No shares were hedged as of September 30, 2022.

The Company also holds certain foreign currency forward contracts not designated as hedging instruments under ASC 815 to hedge foreign currency exposure resulting from monetary assets and liabilities denominated in nonfunctional currencies. The changes in fair value of these foreign currency exchange derivatives are recorded in the consolidated statements of income where they offset foreign currency transactional gains and losses on the nonfunctional currency denominated assets and liabilities being hedged.

Fair Value of Derivative Instruments

The following table presents the location and fair values of derivative instruments and hedging activities included in the Company’s consolidated statements of financial position (in millions):

	Designated as Hedging Instruments		Not Designated as Hedging Instruments	
	September 30, 2022	September 30, 2021	September 30, 2022	September 30, 2021
Other current assets				
Foreign currency exchange derivatives	$ 30	$ 15	$ 24	$ 17
Commodity derivatives	—	2	—	—
Other noncurrent assets				
Equity swap	—	—	—	23
Total assets	$ 30	$ 17	$ 24	$ 40
Other current liabilities				
Foreign currency exchange derivatives	$ 24	$ 11	$ 27	$ 6
Commodity derivatives	10	1	—	—
Long-term debt				
Foreign currency denominated debt	3,077	2,918	—	—
Total liabilities	$ 3,111	$ 2,930	$ 27	$ 6

Counterparty Credit Risk

The use of derivative financial instruments exposes the Company to counterparty credit risk. The Company has established policies and procedures to limit the potential for counterparty credit risk, including establishing limits for credit exposure and continually assessing the creditworthiness of counterparties. As a matter of practice, the Company deals with major banks worldwide having strong investment grade long-term credit ratings. To further reduce the risk of loss, the Company generally enters into International Swaps and Derivatives Association ("ISDA") master netting agreements with substantially all of its counterparties. The Company enters into ISDA master netting agreements with counterparties that permit the net settlement of amounts owed under the derivative contracts. The master netting agreements generally provide for net settlement of all outstanding contracts with a counterparty in the case of an event of default or a termination event. The Company has not elected to offset the fair value positions of the derivative contracts recorded in the consolidated statements of financial position.

The Company's derivative contracts do not contain any credit risk related contingent features and do not require collateral or other security to be furnished by the Company or the counterparties. The Company's exposure to credit risk associated with its derivative instruments is measured on an individual counterparty basis, as well as by groups of counterparties that share similar attributes. The Company does not anticipate any non-performance by any of its counterparties, and the concentration of risk with financial institutions does not present significant credit risk to the Company.

The gross and net amounts of derivative assets and liabilities were as follows (in millions):

	Fair Value of Assets		Fair Value of Liabilities	
	September 30, 2022	September 30, 2021	September 30, 2022	September 30, 2021
Gross amount recognized	$ 54	$ 57	$ 3,138	$ 2,936
Gross amount eligible for offsetting	(42)	(16)	(42)	(16)
Net amount	$ 12	$ 41	$ 3,096	$ 2,920

Derivatives Impact on the Statements of Income and Statements of Comprehensive Income

The following table presents the pre-tax gains (losses) recorded in other comprehensive income (loss) related to cash flow hedges (in millions):

	Year Ended September 30,		
Derivatives in Cash Flow Hedging Relationships	2022	2021	2020
Foreign currency exchange derivatives	$ 26	$ 15	$ 1
Commodity derivatives	(21)	4	6
Interest rate swaps	16	(21)	—
Total	$ 21	$ (2)	$ 7

The following table presents the location and amount of the pre-tax gains (losses) on cash flow hedges reclassified from AOCI into the Company's consolidated statements of income (in millions):

		Year Ended September 30,		
Derivatives in Cash Flow Hedging Relationships	Location of Gain (Loss) Reclassified from AOCI into Income	2022	2021	2020
Foreign currency exchange derivatives	Cost of sales	$ 25	$ 11	$ (5)
Commodity derivatives	Cost of sales	(7)	3	2
Interest rate swaps	Net financing charges	(2)	—	—
Total		$ 16	$ 14	$ (3)

The following table presents the location and amount of pre-tax gains (losses) on derivatives not designated as hedging instruments recognized in the Company's consolidated statements of income (in millions):

		Year Ended September 30,		
Derivatives Not Designated as Hedging Instruments	Location of Gain (Loss) Recognized in Income on Derivative	2022	2021	2020
Foreign currency exchange derivatives	Cost of sales	$ 10	$ (6)	$ (1)
Foreign currency exchange derivatives	Net financing charges	85	174	87
Foreign currency exchange derivatives	Selling, general and administrative	—	(2)	—
Foreign currency exchange derivatives	Income tax provision	—	(1)	—
Equity swap	Selling, general and administrative	(5)	28	(4)
Total		$ 90	$ 193	$ 82

Pre-tax gains (losses) on net investment hedges recorded as foreign currency translation adjustment ("CTA") within other comprehensive income (loss) were $470 million, $42 million and $(172) million for the years ended September 30, 2022, 2021 and 2020, respectively. No gains or losses were reclassified from CTA into income for the years ended September 30, 2022, 2021 and 2020.

12. FAIR VALUE MEASUREMENTS

The following tables present the Company's fair value hierarchy for those assets and liabilities measured at fair value (in millions):

	Total as of September 30, 2022	Fair Value Measurements Using: Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Other current assets				
Foreign currency exchange derivatives	$ 54	$ —	$ 54	$ —
Exchange traded funds (fixed income)[1]	22	22	—	—
Other noncurrent assets				
Deferred compensation plan assets	46	46	—	—
Exchange traded funds (fixed income)[1]	86	86	—	—
Exchange traded funds (equity)[1]	131	131	—	—
Total assets	$ 339	$ 285	$ 54	$ —
Other current liabilities				
Foreign currency exchange derivatives	$ 51	$ —	$ 51	$ —
Commodity derivatives	10	—	10	—
Contingent earn-out liabilities	30	—	—	30
Other noncurrent liabilities				
Contingent earn-out liabilities	30	—	—	30
Total liabilities	$ 121	$ —	$ 61	$ 60

	Total as of September 30, 2021	Fair Value Measurements Using: Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Other current assets				
Foreign currency exchange derivatives	$ 32	$ —	$ 32	$ —
Commodity derivatives	2	—	2	—
Other noncurrent assets				
Deferred compensation plan assets	63	63	—	—
Exchange traded funds (fixed income)[1]	146	146	—	—
Exchange traded funds (equity)[1]	168	168	—	—
Equity swap	23	—	23	—
Total assets	$ 434	$ 377	$ 57	$ —
Other current liabilities				
Foreign currency exchange derivatives	$ 17	$ —	$ 17	$ —
Commodity derivatives	1	—	1	—
Contingent earn-out liabilities	32	—	—	32
Other noncurrent liabilities				
Contingent earn-out liabilities	50	—	—	50
Total liabilities	$ 100	$ —	$ 18	$ 82

[1]Classified as restricted investments for payment of asbestos liabilities. Refer to Note 21, "Commitments and Contingencies" of the notes to consolidated financial statements for further details.

The following table summarizes the changes in contingent earn-out liabilities, which are valued using significant unobservable inputs (Level 3) (in millions):

Balance at September 30, 2021	$	82
Acquisitions		29
Payments		(5)
Reduction for change in estimates		(43)
Currency translation		(3)
Balance at September 30, 2022	$	60

Valuation Methods

Foreign currency exchange derivatives: The foreign currency exchange derivatives are valued under a market approach using publicized spot and forward prices.

Commodity derivatives: The commodity derivatives are valued under a market approach using publicized prices, where available, or dealer quotes.

Equity swaps: The equity swaps are valued under a market approach as the fair value of the swaps is equal to the Company's stock price at the reporting period date.

Deferred compensation plan assets: Assets held in the deferred compensation plans will be used to pay benefits under certain of the Company's non-qualified deferred compensation plans. The investments primarily consist of mutual funds which are publicly traded on stock exchanges and are valued using a market approach based on the quoted market prices. Unrealized gains (losses) on the deferred compensation plan assets are recognized in the consolidated statements of income where they offset unrealized gains and losses on the related deferred compensation plan liability.

Investments in exchange traded funds: Investments in exchange traded funds are valued using a market approach based on quoted market prices, where available, or broker/dealer quotes of identical or comparable instruments. Refer to Note 21, "Commitments and Contingencies," of the notes to consolidated financial statements for further information.

Contingent earn-out liabilities: The contingent earn-out liabilities are typically established using a Monte Carlo simulation based on the forecasted operating results and the earn-out formulas specified in the purchase agreements.

The following table presents the portion of unrealized gains (losses) recognized in the consolidated statements of income that relate to equity securities still held at September 30, 2022 and 2021 (in millions):

	Year Ended September 30, 2022	Year Ended September 30, 2021
Deferred compensation plan assets	$ (10)	$ 7
Investments in exchange traded funds	(55)	37

All of the gains and losses on investments in exchange traded funds related to restricted investments.

The fair values of cash and cash equivalents, accounts receivable, short-term debt and accounts payable approximate their carrying values. At September 30, 2022, the fair value of long-term debt was $7.3 billion, including public debt of $7.1 billion and other long-term debt of $0.2 billion. At September 30, 2021, the fair value of long-term debt was $8.5 billion, including public debt of $8.3 billion and other long-term debt of $0.2 billion. The fair value of public debt was determined primarily using market quotes which are classified as Level 1 inputs within the ASC 820 fair value hierarchy. The fair value of other long-term debt was determined using quoted market prices for similar instruments and are classified as Level 2 inputs within the ASC 820 fair value hierarchy.

13. STOCK-BASED COMPENSATION

On March 10, 2021, the shareholders of the Company approved the Johnson Controls International plc 2021 Equity and Incentive Plan, which terminated the Johnson Controls International plc 2012 Share and Incentive Plan, as amended in September 2016 (collectively, the "Plans"). Both Plans authorize stock options, stock appreciation rights, restricted (non-vested) stock/units, performance shares, performance units and other stock-based awards. The Compensation and Talent Development Committee of the Company's Board of Directors determines the types of awards to be granted to individual participants and the terms and conditions of the awards. As of September 30, 2022, there were 55 million shares of the Company's common stock reserved and 54 million shares available for issuance under the 2021 Equity and Incentive Plan.

The following table summarizes stock-based compensation related charges and benefits (in millions):

	Year Ended September 30,		
	2022	2021	2020
Compensation expense	$ 104	$ 97	$ 66
Income tax benefit resulting from share-based compensation arrangements	26	24	16
Tax impact from exercise and vesting of equity settled awards	12	12	—

Compensation expense excludes the offsetting impact of equity swaps and is recorded in selling, general and administrative expenses. The Company does not settle stock options granted under share-based payment arrangements in cash.

Restricted (Non-vested) Stock / Units

A summary of non-vested restricted stock awards at September 30, 2022, and changes for the year then ended, is presented below:

	Weighted Average Price	Shares/Units Subject to Restriction
Non-vested, September 30, 2021	$ 44.06	3,334,437
Granted	74.63	1,508,550
Vested	42.52	(1,497,497)
Forfeited	56.58	(396,296)
Non-vested, September 30, 2022	$ 58.78	2,949,194

At September 30, 2022, the Company had approximately $107 million of total unrecognized compensation cost related to non-vested restricted stock arrangements granted for continuing operations which is expected to be recognized over a weighted-average period of 2.0 years.

Performance Share Awards

The following table summarizes the assumptions used in determining the fair value of stock options granted:

	Year Ended September 30,		
	2022	2021	2020
Risk-free interest rate	0.99%	0.20%	1.60%
Expected volatility of the Company’s stock	30.00%	30.90%	21.80%

A summary of the status of the Company's non-vested PSUs at September 30, 2022, and changes for the year then ended, is presented below:

	Weighted Average Price	Shares/Units Subject to PSU
Non-vested, September 30, 2021	$ 43.11	1,196,318
Granted	82.88	482,030
Vested	36.35	(402,465)
Forfeited	60.02	(132,812)
Non-vested, September 30, 2022	$ 60.30	1,143,071

At September 30, 2022, the Company had approximately $37 million of total unrecognized compensation cost related to non-vested performance-based share unit awards granted for continuing operations which is expected to be recognized over a weighted-average period of 1.7 years.

Stock Options

The following table summarizes the assumptions used in determining the fair value of stock options granted:

	Year Ended September 30,		
	2022	2021	2020
Expected life of option (years)	6.0	6.5	6.5
Risk-free interest rate	1.35%	0.60%	1.67%
Expected volatility of the Company's stock	27.80%	27.60%	22.40%
Expected dividend yield on the Company's stock	1.71%	2.28%	2.49%

A summary of stock option activity at September 30, 2022, and changes for the year then ended, is presented below:

	Weighted Average Option Price	Shares Subject to Option	Weighted Average Remaining Contractual Life (years)	Aggregate Intrinsic Value (in millions)
Outstanding, September 30, 2021	$ 38.84	5,951,011		
Granted	79.54	548,398		
Exercised	33.77	(542,903)		
Forfeited or expired	50.97	(272,659)		
Outstanding, September 30, 2022	$ 42.46	5,683,847	5.7	$ 52
Exercisable, September 30, 2022	$ 37.86	4,082,897	4.1	$ 47

The following table summarizes additional stock option information:

	Year Ended September 30,		
	2022	2021	2020
Weighted-average grant-date fair value of options granted	$ 18.59	$ 9.36	$ 7.29
Intrinsic value of options exercised (in millions)	19	94	30

At September 30, 2022, the Company had approximately $10 million of total unrecognized compensation cost related to non-vested stock options granted for continuing operations which is expected to be recognized over a weighted-average period of 1.6 years.

14. EARNINGS PER SHARE

The following table reconciles the numerators and denominators used to calculate basic and diluted earnings per share (in millions):

	Year Ended September 30, 2022	2021	2020
Income Available to Ordinary Shareholders			
Income from continuing operations	$ 1,532	$ 1,513	$ 631
Income from discontinued operations	—	124	—
Basic and diluted income available to shareholders	$ 1,532	$ 1,637	$ 631
Weighted Average Shares Outstanding			
Basic weighted average shares outstanding	696.1	716.6	751.0
Effect of dilutive securities:			
Stock options, unvested restricted stock and unvested performance share awards	3.5	4.5	2.6
Diluted weighted average shares outstanding	699.6	721.1	753.6
Antidilutive Securities			
Stock options and unvested restricted stock	0.4	—	1.4

15. EQUITY

Dividends

The authority to declare and pay dividends is vested in the Board of Directors. The timing, declaration and payment of future dividends to holders of the Company's ordinary shares is determined by the Company's Board of Directors and depends upon many factors, including the Company's financial condition and results of operations, the capital requirements of the Company's businesses, industry practice and any other relevant factors.

Under Irish law, dividends may only be paid (and share repurchases and redemptions must generally be funded) out of "distributable reserves." The creation of distributable reserves was accomplished by way of a capital reduction, which the Irish High Court approved on December 18, 2014 and as acquired in conjunction with the Merger.

Share Repurchase Program

As of September 30, 2022, approximately $3.6 billion remained available under the share repurchase program which was approved by the Company's Board of Directors in March 2021. The share repurchase program does not have an expiration date and may be amended or terminated by the Board of Directors at any time without prior notice.

The Company repurchased and retired its ordinary shares of approximately $1,441 million, $1,307 million and $2,204 million during the years ended September 30, 2022, 2021 and 2020, respectively.

Accumulated Other Comprehensive Income

The following table includes changes in AOCI attributable to Johnson Controls (in millions, net of tax):

	Year Ended September 30, 2022	2021	2020
Foreign currency translation adjustments			
Balance at beginning of period	$ (421)	$ (778)	$ (785)
Aggregate adjustment for the period (net of tax effect of $0, $0 and $1)	(480)	357	7
Balance at end of period	(901)	(421)	(778)
Realized and unrealized gains (losses) on derivatives			
Balance at beginning of period	(17)	2	(2)
Current period changes in fair value (net of tax effect of $2, $5 and $1)	18	(8)	3
Reclassification to income (net of tax effect of $(4), $(3) and $0) [1]	(12)	(11)	1
Balance at end of period	(11)	(17)	2
Pension and postretirement plans			
Balance at beginning of period	4	—	(8)
Reclassification to income (net of tax effect of $0, $0 and $(1))	(3)	(3)	(1)
Other changes (net of tax effect of $0, $(1) and $4)	—	7	9
Balance at end of period	1	4	—
Accumulated other comprehensive loss, end of period	$ (911)	$ (434)	$ (776)

(1) Refer to Note 11, "Derivative Instruments and Hedging Activities," of the notes to consolidated financial statements for disclosure of the line items in the consolidated statements of income affected by reclassifications from AOCI into income related to derivatives.

16. RETIREMENT PLANS

Pension Benefits

The Company has non-contributory defined benefit pension plans covering certain U.S. and non-U.S. employees. The benefits provided are primarily based on years of service and average compensation or a monthly retirement benefit amount. Certain of the Company's U.S. pension plans have been amended to prohibit new participants from entering the plans and no longer accrue benefits. Funding for U.S. pension plans equals or exceeds the minimum requirements of the Employee Retirement Income Security Act of 1974. Funding for non-U.S. plans observes the local legal and regulatory limits. Also, the Company makes contributions to union-trusteed pension funds for construction and service personnel.

The following table includes information for pension plans with accumulated benefit obligations ("ABO") in excess of plan assets (in millions):

	September 30, 2022	2021
Accumulated benefit obligation	$ 2,004	$ 4,402
Fair value of plan assets	1,720	3,841

The following table includes information for pension plans with projected benefit obligations ("PBO") in excess of plan assets (in millions):

	September 30, 2022	2021
Projected benefit obligation	$ 2,013	$ 4,519
Fair value of plan assets	1,729	3,954

During the year ended September 30, 2022, total employer contributions to the defined benefit pension plans were $93 million, none of which were voluntary contributions made by the Company. The Company expects to contribute approximately $38 million in cash to its defined benefit pension plans in the year ended September 30, 2023. Projected benefit payments from the plans as of September 30, 2022 are estimated as follows (in millions):

2023	$	266
2024		248
2025		246
2026		245
2027		243
2028 - 2032		1,180

Postretirement Benefits

The Company provides certain health care and life insurance benefits for eligible retirees and their dependents primarily in the U.S. and Canada. Most non-U.S. employees are covered by government sponsored programs. The cost to the Company is not significant.

Eligibility for coverage is based on meeting certain years of service and retirement age qualifications. These benefits may be subject to deductibles, co-payment provisions and other limitations. The Company has reserved the right to modify these benefits.

The health care cost trend assumption does not have a significant effect on the amounts reported.

The following table includes information for postretirement plans with accumulated postretirement benefit obligations ("APBO") in excess of plan assets (in millions):

	September 30,	
	2022	2021
Accumulated postretirement benefit obligation	$ 68	$ 96
Fair value of plan assets	28	38

During the year ended September 30, 2022, total employer contributions to the postretirement plans were $3 million. The Company expects to contribute approximately $3 million in cash to its postretirement plans in the year ended September 30, 2023. Projected benefit payments from the plans as of September 30, 2022 are estimated as follows (in millions):

2023	$	11
2024		10
2025		10
2026		10
2027		9
2028 - 2032		31

Defined Contribution Plans

The Company sponsors various defined contribution savings plans that allow employees to contribute a portion of their pre-tax and/or after-tax income in accordance with plan specified guidelines. Under specified conditions, the Company will contribute to certain savings plans based on predetermined percentages of compensation earned by the employee and/or will match a percentage of the employee contributions up to certain limits. The Company temporarily suspended certain contributions in fiscal 2021 and 2020 in response to the COVID-19 pandemic. Defined contribution plan contributions charged to expense amounted to $196 million, $118 million and $104 million during the years ended September 30, 2022, 2021 and 2020, respectively.

Multiemployer Benefit Plans

The Company contributes to multiemployer benefit plans based on obligations arising from collective bargaining agreements related to certain of its hourly employees in the U.S. These plans provide retirement benefits to participants based on their service to contributing employers. The benefits are paid from assets held in trust for that purpose. The trustees typically are responsible for determining the level of benefits to be provided to participants as well as for such matters as the investment of the assets and the administration of the plans.

The risks of participating in these multiemployer benefit plans are different from single-employer benefit plans in the following aspects:

- Assets contributed to the multiemployer benefit plan by one employer may be used to provide benefits to employees of other participating employers.
- If a participating employer stops contributing to the multiemployer benefit plan, the unfunded obligations of the plan may be borne by the remaining participating employers.
- If the Company stops participating in some of its multiemployer benefit plans, the Company may be required to pay those plans an amount based on its allocable share of the underfunded status of the plan, referred to as a withdrawal liability.

The Company participates in approximately 270 multiemployer benefit plans, none of which are individually significant to the Company. The number of employees covered by the Company's multiemployer benefit plans has remained consistent over the past three years, and there have been no significant changes that affect the comparability of fiscal 2022, 2021 and 2020 contributions. The Company recognizes expense for the contractually-required contribution for each period. The Company contributed $71 million, $67 million and $66 million to multiemployer benefit plans during the years ended September 30, 2022, 2021 and 2020, respectively.

Based on the most recent information available, the Company believes that the present value of actuarial accrued liabilities in certain of these multiemployer benefit plans may exceed the value of the assets held in trust to pay benefits. Currently, the Company is not aware of any significant multiemployer benefit plans for which it is probable or reasonably possible that the Company will be obligated to make up any shortfall in funds. Moreover, if the Company were to exit certain markets or otherwise cease making contributions to these funds, the Company could trigger a withdrawal liability. Currently, the Company is not aware of any multiemployer benefit plans for which it is probable or reasonably possible that the Company will have a significant withdrawal liability. Any accrual for a shortfall or withdrawal liability will be recorded when it is probable that a liability exists and it can be reasonably estimated.

Plan Assets

The Company's investment policies employ an approach whereby a mix of equities, fixed income and alternative investments are used to maximize the long-term return of plan assets for a prudent level of risk. The investment portfolio primarily contains a diversified blend of equity and fixed income investments. Equity investments are diversified across U.S. and non-U.S. stocks, as well as growth, value and small to large capitalization. Fixed income investments include corporate and government issues, with short-, mid- and long-term maturities, with a focus on investment grade when purchased and a target duration close to that of the plan liability. Investment and market risks are measured and monitored on an ongoing basis through regular investment portfolio reviews, annual liability measurements and periodic asset/liability studies. The majority of the real estate component of the portfolio is invested in a diversified portfolio of high-quality, operating properties with cash yields greater than the targeted appreciation. Investments in other alternative asset classes, including hedge funds and commodities, diversify the expected investment returns relative to the equity and fixed income investments. As a result of the Company's diversification strategies, there are no significant concentrations of risk within the portfolio of investments.

The Company's actual asset allocations are in line with target allocations. The Company rebalances asset allocations as appropriate, in order to stay within a range of allocation for each asset category.

The expected return on plan assets is based on the Company's expectation of the long-term average rate of return of the capital markets in which the plans invest. The average market returns are adjusted, where appropriate, for active asset management returns. The expected return reflects the investment policy target asset mix and considers the historical returns earned for each asset category.

The Company's plan assets at September 30, 2022 and 2021, by asset category, are as follows (in millions):

		Fair Value Measurements Using:		
Asset Category	Total as of September 30, 2022	Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
U.S. Pension				
Cash and Cash Equivalents	$ 40	$ —	$ 40	$ —
Equity Securities				
Large-Cap	160	160	—	—
Small-Cap	175	175	—	—
International - Developed	139	139	—	—
International - Emerging	39	39	—	—
Fixed Income Securities				
Government	217	216	1	—
Corporate/Other	804	804	—	—
Total Investments in the Fair Value Hierarchy	1,574	$ 1,533	$ 41	$ —
Real Estate Investments Measured at Net Asset Value[(1)]	322			
Due to Broker	(166)			
Total Plan Assets	$ 1,730			
Non-U.S. Pension				
Cash and Cash Equivalents	$ 150	$ 150	$ —	$ —
Equity Securities				
Large-Cap	45	8	37	—
International - Developed	43	12	31	—
International - Emerging	3	—	3	—
Fixed Income Securities				
Government	650	50	600	—
Corporate/Other	418	277	141	—
Hedge Fund	18	—	18	—
Real Estate	9	9	—	—
Total Investments in the Fair Value Hierarchy	1,336	$ 506	$ 830	$ —
Real Estate Investments Measured at Net Asset Value[(1)]	97			
Total Plan Assets	$ 1,433			
Postretirement				
Cash and Cash Equivalents	$ 13	$ 13	$ —	$ —
Equity Securities				
Global	66	—	66	—
Total Investments in the Fair Value Hierarchy	79	$ 13	$ 66	$ —
Multi-Credit Strategy Investments Measured at Net Asset Value[(1)]	65			
Total Plan Assets	$ 144			

Asset Category	Total as of September 30, 2021	Fair Value Measurements Using: Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
U.S. Pension				
Cash and Cash Equivalents	$ 75	$ —	$ 75	$ —
Equity Securities				
Large-Cap	185	185	—	—
Small-Cap	215	215	—	—
International - Developed	182	182	—	—
International - Emerging	34	34	—	—
Fixed Income Securities				
Government	286	98	188	—
Corporate/Other	1,279	1,279	—	—
Total Investments in the Fair Value Hierarchy	2,256	$ 1,993	$ 263	$ —
Real Estate Investments Measured at Net Asset Value[(1)]	280			
Due to Broker	(77)			
Total Plan Assets	$ 2,459			
Non-U.S. Pension				
Cash and Cash Equivalents	$ 151	$ 151	$ —	$ —
Large-Cap	197	23	174	—
International - Developed	128	30	98	—
International - Emerging	2	—	2	—
Fixed Income Securities				
Government	1,123	77	1,046	—
Corporate/Other	597	320	277	—
Hedge Fund	27	—	27	—
Real Estate	14	14	—	—
Total Investments in the Fair Value Hierarchy	2,239	$ 615	$ 1,624	$ —
Real Estate Investments Measured at Net Asset Value[(1)]	105			
Total Plan Assets	$ 2,344			
Postretirement				
Cash and Cash Equivalents	$ 5	$ 5	$ —	$ —
Equity Securities				
Large-Cap	24	—	24	—
Small-Cap	8	—	8	—
International - Developed	19	—	19	—
International - Emerging	12	—	12	—
Fixed Income Securities				
Government	20	—	20	—
Corporate/Other	56	—	56	—
Commodities	17	—	17	—
Real Estate	11	—	11	—
Total Plan Assets	$ 172	$ 5	$ 167	$ —

[(1)]The fair value of certain real estate and multi-credit strategy investments do not have a readily determinable fair value and require the fund managers to independently arrive at fair value by calculating net asset value ("NAV") per share. In order to calculate NAV per share, the fund managers value the investments using any one, or a combination of, the following methods: independent third party appraisals, discounted cash flow analysis of net cash flows projected to be generated by the investment and recent sales of comparable investments. Assumptions used to revalue the investments are updated every quarter. Due to the fact that the fund managers calculate NAV per share, the Company utilizes a practical expedient for measuring the fair value of its real estate and multi-credit strategy investments, as provided for under ASC 820, "Fair Value Measurement." In applying the practical expedient, the Company is not required to further adjust the NAV provided by the fund manager in order to determine the fair value of its investments as the NAV per share is calculated in a manner consistent with the measurement principles of ASC 946, "Financial Services - Investment Companies," and as of the Company's measurement date. The Company believes this is an appropriate methodology to obtain the fair value of these assets. For the component of the real estate portfolio under development, the investments are carried at cost until they are completed and valued by a third party appraiser. In accordance with ASU No. 2015-07, "Disclosures for Investments in Certain Entities That Calculate Net Asset Value per Share (or Its Equivalent)," investments for which fair value is measured using the net asset value per share practical expedient are disclosed separate from the fair value hierarchy. The fair value amounts presented in these tables are intended to permit reconciliation of total plan assets to the amounts presented in the notes to consolidated financial statements.

The following is a description of the valuation methodologies used for assets measured at fair value. Certain assets are held within commingled funds which are valued at the unitized NAV or percentage of the net asset value as determined by the manager of the fund. These values are based on the fair value of the underlying net assets owned by the fund.

Cash and Cash Equivalents: The fair value of cash and cash equivalents is valued at cost.

Equity Securities: The fair value of equity securities is determined by direct quoted market prices. The underlying holdings are direct quoted market prices on regulated financial exchanges.

Fixed Income Securities: The fair value of fixed income securities is determined by direct or indirect quoted market prices. If indirect quoted market prices are utilized, the value of assets held in separate accounts is not published, but the investment managers report daily the underlying holdings. The underlying holdings are direct quoted market prices on regulated financial exchanges.

Commodities: The fair value of the commodities is determined by quoted market prices of the underlying holdings on regulated financial exchanges.

Hedge Funds: The fair value of hedge funds is accounted for by the custodian. The custodian obtains valuations from underlying managers based on market quotes for the most liquid assets and alternative methods for assets that do not have sufficient trading activity to derive prices. The Company and custodian review the methods used by the underlying managers to value the assets. The Company believes this is an appropriate methodology to obtain the fair value of these assets.

Real Estate: The fair value of real estate is determined by quoted market prices of the underlying Real Estate Investment Trusts ("REITs"), which are securities traded on an open exchange.

The methods described above may produce a fair value calculation that may not be indicative of net realizable value or reflective of future fair values. Furthermore, while the Company believes its valuation methods are appropriate and consistent with other market participants, the use of different methodologies or assumptions to determine the fair value of certain financial instruments could result in a different fair value measurement at the reporting date.

There were no Level 3 assets as of September 30, 2022 or 2021 or any Level 3 asset activity during fiscal 2022 or 2021.

Funded Status

The following table contains the ABO and reconciliations of the changes in the PBO, the changes in plan assets and the funded status (in millions):

	Pension Benefits				Postretirement Benefits	
	U.S. Plans		Non-U.S. Plans			
September 30,	2022	2021	2022	2021	2022	2021
Accumulated Benefit Obligation	$ 1,822	$ 2,629	$ 1,417	$ 2,540	$ 89	$ —
Change in Projected Benefit Obligation						
Projected benefit obligation at beginning of year	$ 2,629	$ 3,217	$ 2,625	$ 2,726	$ 123	$ 146
Service cost	—	—	20	27	1	1
Interest cost	56	47	39	32	2	2
Plan participant contributions	—	—	2	3	3	3
Actuarial gain	(587)	(52)	(651)	(103)	(25)	(13)
Amendments made during the year	—	—	(1)	(6)	—	—
Benefits and settlements paid	(276)	(583)	(166)	(124)	(14)	(17)
Curtailment	—	—	—	(3)	—	—
Other	—	—	(2)	(2)	—	—
Currency translation adjustment	—	—	(395)	75	(1)	1
Projected benefit obligation at end of year	$ 1,822	$ 2,629	$ 1,471	$ 2,625	$ 89	$ 123
Change in Plan Assets						
Fair value of plan assets at beginning of year	$ 2,459	$ 2,706	$ 2,344	$ 2,213	$ 172	$ 153
Actual return on plan assets	(454)	333	(459)	125	(20)	30
Employer and employee contributions	1	3	94	65	6	6
Benefits paid	(85)	(108)	(74)	(79)	(14)	(17)
Settlement payments	(191)	(475)	(92)	(45)	—	—
Other	—	—	(2)	(1)	—	—
Currency translation adjustment	—	—	(378)	66	—	—
Fair value of plan assets at end of year	$ 1,730	$ 2,459	$ 1,433	$ 2,344	$ 144	$ 172
Funded status	$ (92)	$ (170)	$ (38)	$ (281)	$ 55	$ 49
Amounts recognized in the statement of financial position consist of:						
Prepaid benefit cost	$ 37	$ 44	$ 151	$ 79	$ 95	$ 107
Accrued benefit liability	(129)	(214)	(189)	(360)	(40)	(58)
Net amount recognized	$ (92)	$ (170)	$ (38)	$ (281)	$ 55	$ 49
Weighted Average Assumptions [1]						
Discount rate [2]	5.08 %	2.50 %	4.36 %	1.80 %	4.92 %	2.30 %
Rate of compensation increase	N/A	N/A	3.00 %	2.85 %	N/A	N/A
Interest crediting rate	N/A	N/A	1.69 %	1.45 %	N/A	N/A

(1)Plan assets and obligations are determined based on a September 30 measurement date at September 30, 2022 and 2021.

(2 The Company considers the expected benefit payments on a plan-by-plan basis when setting assumed discount rates. As a result, the Company uses different discount rates for each plan depending on the plan jurisdiction, the demographics of participants and the expected timing of benefit payments. For the U.S. pension and postretirement plans, the Company uses a discount rate provided by an independent third party calculated based on an appropriate mix of high quality bonds. For the non-U.S. pension and postretirement plans, the Company consistently uses the relevant country specific benchmark indices for

determining the various discount rates. The Company has elected to utilize a full yield curve approach in the estimation of service and interest components of net periodic benefit cost (credit) for pension and other postretirement for plans that utilize a yield curve approach. The full yield curve approach applies the specific spot rates along the yield curve used in the determination of the benefit obligation to the relevant projected cash flows.

The fiscal 2022 and fiscal 2021 net actuarial gains related to changes in the projected benefit obligation were primarily the result of the increase in discount rates globally.

Net Periodic Benefit Cost

The following table contains the components of net periodic benefit costs, which are primarily recorded in selling, general and administrative expenses in the consolidated statements of income (in millions):

	Pension Benefits								
	U.S. Plans			Non-U.S. Plans			Postretirement Benefits		
Year ended September 30,	2022	2021	2020	2022	2021	2020	2022	2021	2020
Components of Net Periodic Benefit Cost (Credit):									
Service cost	$ —	$ —	$ —	$ 20	$ 27	$ 25	$ 1	$ 1	$ 1
Interest cost	56	47	67	39	32	36	2	2	4
Expected return on plan assets	(150)	(171)	(180)	(81)	(112)	(111)	(9)	(8)	(9)
Net actuarial (gain) loss	16	(214)	244	(116)	(115)	43	4	(35)	2
Amortization of prior service cost (credit)	—	—	—	—	1	1	(4)	(4)	(3)
Curtailment gain	—	—	—	—	(3)	(8)	—	—	—
Settlement (gain) loss	1	—	6	5	(1)	—	—	—	—
Special termination benefit cost	—	—	—	—	2	—	—	—	—
Net periodic benefit cost (credit) included in continuing operations	$ (77)	$ (338)	$ 137	$ (133)	$ (169)	$ (14)	$ (6)	$ (44)	$ (5)
Expense Assumptions:									
Discount rate	2.52 %	2.25 %	2.95 %	1.79 %	1.35 %	1.50 %	2.30 %	1.90 %	2.65 %
Expected return on plan assets	7.00 %	6.50 %	6.90 %	3.70 %	4.90 %	5.20 %	5.29 %	5.30 %	5.70 %
Rate of compensation increase	N/A	N/A	N/A	2.85 %	2.75 %	2.80 %	N/A	N/A	N/A
Interest crediting rate	N/A	N/A	N/A	1.44 %	1.50 %	1.50 %	N/A	N/A	N/A

17. SIGNIFICANT RESTRUCTURING AND IMPAIRMENT COSTS

To better align its resources with its growth strategies and reduce the cost structure of its global operations in certain underlying markets, the Company commits to restructuring plans as necessary. Restructuring plans generally result in charges for workforce reductions, plant closures, asset impairments and other related costs which are reported as restructuring and impairment costs in the Company's consolidated statements of income. The other related costs consist primarily of consulting costs incurred as a direct result of the restructuring initiatives. The Company expects the restructuring actions to reduce cost of sales and SG&A due to reduced employee-related costs, depreciation and amortization expense.

In fiscal 2021, the Company committed to a significant multi-year restructuring plan ("2021 Plan") which is expected to be completed during fiscal 2023. The Company originally expected to incur $385 million of restructuring costs across all segments and at Corporate through fiscal 2023. The Company has incurred and exceeded these costs during fiscal 2022 due to certain restructuring actions and expenses planned for fiscal 2023 being accelerated into fiscal 2022. In total, the Company recorded $424 million of restructuring and impairment costs related to the 2021 Plan, which is the total amount expected to be incurred for this restructuring plan.

The following table summarizes restructuring and impairment costs related to the 2021 Plan (in millions):

	Year Ended September 30, 2022	Inception to September 30, 2022
Building Solutions North America	$ 41	$ 111
Building Solutions EMEA/LA	33	62
Building Solutions Asia Pacific	21	49
Global Products	75	166
Corporate	12	36
Total	$ 182	$ 424

The following table summarizes the changes in the Company's 2021 Plan reserve, included primarily within other current liabilities in the consolidated statements of financial position (in millions):

	Employee Severance and Termination Benefits	Long-Lived Asset Impairments [1]	Other	Total
Original reserve	$ 68	$ 98	$ 76	$ 242
Utilized—cash	(28)	—	(51)	(79)
Utilized—noncash	—	(98)	—	(98)
Balance at September 30, 2021	40	—	25	65
Additional restructuring costs	116	17	49	182
Utilized—cash	(81)	—	(66)	(147)
Utilized—noncash	—	(17)	—	(17)
Currency translation	(1)	—	—	(1)
Balance at September 30, 2022	$ 74	$ —	$ 8	$ 82

[1] Of the $98 million of long-lived asset impairment charges in fiscal 2021, $50 million related to the Global Products segment, $33 million related to the Building Solutions North America segment, $6 million related to Corporate assets, $5 million related to the Building Solutions EMEA/LA segment and $4 million related to the Building Solutions Asia Pacific segment. Of the $17 million of long-lived asset impairment charges in fiscal 2022, $6 million related to the Building Solutions Asia Pacific segment, $5 million related to Corporate assets, $3 million related to the Global Products segment, $2 million related to the Building Solutions EMEA/LA segment and $1 million related to the Building Solutions North America segment.

The 2021 Plan included workforce reductions of approximately 6,200 employees. Restructuring charges associated with employee severance and termination benefits are paid over the severance period granted to each employee or on a lump sum basis in accordance with individual severance agreements. As of September 30, 2022, approximately 4,000 of the employees have been separated from the Company pursuant to the restructuring plans.

Company management closely monitors its overall cost structure and continually analyzes each of its businesses for opportunities to consolidate current operations, improve operating efficiencies and locate facilities in close proximity to customers. This ongoing analysis includes a review of its manufacturing, engineering and purchasing operations, as well as the overall global footprint for all its businesses.

18. INCOME TAXES

The more significant components of the Company's income tax provision from continuing operations are as follows (in millions):

	2022	2021	2020
Tax expense at Ireland statutory rate	$ 214	$ 327	$ 113
U.S. state income tax, net of federal benefit	(23)	34	8
Income subject to the U.S. federal tax rate	(95)	3	(92)
Income subject to rates different than the statutory rate	125	30	99
Reserve and valuation allowance adjustments	(274)	66	(70)
Intercompany intellectual property transfer	—	417	—
Restructuring and impairment costs	40	(9)	50
Income tax provision (benefit)	$ (13)	$ 868	$ 108

The statutory tax rate in Ireland of 12.5% is being used as a comparison since the Company is domiciled in Ireland.

For fiscal 2022, the effective tax rate for continuing operations was (1)% and was lower than the statutory tax rate primarily due to tax reserve adjustments as the result of expired statute of limitations for certain tax years and the benefits of continuing global tax planning initiatives, partially offset by the income tax effects of impairment and restructuring charges, valuation allowance adjustments, the establishment of a deferred tax liability on the outside basis difference of the Company's investment in certain subsidiaries as a result of the planned divestitures and tax rate differentials.

For fiscal 2021, the effective tax rate for continuing operations was 33% and was higher than the statutory tax rate primarily due to the tax impacts of an intercompany transfer of certain of the Company's intellectual property rights, valuation allowance adjustments, the income tax effects of mark-to-market adjustments and tax rate differentials, partially offset by the benefits of continuing global tax planning initiatives.

For fiscal 2020, the effective tax rate for continuing operations was 12% and was lower than the statutory tax rate primarily due to tax audit reserve adjustments, the income tax effects of mark-to-market adjustments, valuation allowance adjustments and the benefits of continuing global tax planning initiatives, partially offset by a discrete tax charge related to the remeasurement of deferred tax assets and liabilities as a result of Swiss tax reform, the tax impact of an impairment charge and tax rate differentials.

Valuation Allowances

The Company reviews the realizability of its deferred tax assets and related valuation allowances on a quarterly basis, or whenever events or changes in circumstances indicate that a review is required. In determining the requirement for a valuation allowance, the historical and projected financial results of the legal entity or consolidated group recording the net deferred tax asset are considered, along with any other positive or negative evidence. Since future financial results may differ from previous estimates, periodic adjustments to the Company's valuation allowances may be necessary.

In fiscal 2022, due to changes in forecasted taxable income, the Company determined that it was more likely than not that certain deferred tax assets of Japan would not be realized. The valuation allowance adjustment resulted in a tax charge of $27 million.

In fiscal 2021, as a result of an intercompany transfer of certain of the Company's intellectual property rights, the Company determined that it is more likely than not that certain deferred tax assets of Switzerland would be realized, and it was more likely than not that certain deferred tax assets of Canada would not be realized. The valuation allowance adjustments resulted in a $39 million net benefit to income tax expense. Due to changes in forecasted taxable income, the Company also recorded a discrete tax charge of $105 million related to valuation allowances on certain Mexico deferred tax assets now considered unrealizable.

In fiscal 2020, the Company performed an analysis related to the realizability of its worldwide deferred tax assets. As a result, and after considering feasible tax planning initiatives and other positive and negative evidence, the Company determined that it was more likely than not that certain deferred tax assets primarily within the U.S. would not be realized, and it is more likely than not that certain deferred tax assets of Canada would be realized. The valuation allowance adjustments resulted in a $26 million net benefit to income tax expense.

Uncertain Tax Positions

The Company is subject to income taxes in the U.S. and numerous non-U.S. jurisdictions. Judgment is required in determining its worldwide provision for income taxes and recording the related assets and liabilities. In the ordinary course of the Company's business, there are many transactions and calculations where the ultimate tax determination is uncertain. The Company is regularly under audit by tax authorities.

A reconciliation of the beginning and ending amount of unrecognized tax benefits is as follows (in millions):

	2022	2021	2020
Beginning balance, October 1	$ 2,726	$ 2,528	$ 2,451
Additions for tax positions related to the current year	169	240	128
Additions for tax positions of prior years	31	33	129
Reductions for tax positions of prior years	(48)	(6)	(27)
Settlements with taxing authorities	(7)	(24)	(54)
Statute closings and audit resolutions	(334)	(45)	(99)
Ending balance, September 30	$ 2,537	$ 2,726	$ 2,528

The following table summarizes gross tax effected unrecognized tax benefits that, if recognized, would impact the effective tax rate and the related accrued interest, net of tax benefit (in millions):

	September 30,		
	2022	2021	2020
Gross tax effected unrecognized tax benefits	$ 1,973	$ 2,268	$ 2,132
Net accrued interest	284	252	205

In fiscal 2022, the statute of limitations for certain tax years expired, which resulted in a $301 million benefit to income tax expense.

During fiscal 2020, tax audit resolutions resulted in a $44 million net benefit to income tax expense.

In the U.S., fiscal years 2017 through 2018 are currently under exam by the Internal Revenue Service ("IRS") for certain legal entities. Additionally, the Company is currently under exam in the following major non-U.S. jurisdictions for continuing operations:

Tax Jurisdiction	Tax Years Covered
Belgium	2015 - 2021
Germany	2007 - 2018
Luxembourg	2017 - 2018
Mexico	2015 - 2017
United Kingdom	2014 - 2015, 2017 - 2018; 2020

It is reasonably possible that certain tax examinations and/or tax litigation will conclude within the next twelve months, which could have a material impact on tax expense. Based upon the circumstances surrounding these examinations, the impact is not currently quantifiable.

Other Tax Matters

During fiscal 2022, 2021 and 2020, the Company incurred charges for restructuring and impairment costs of $721 million, $242 million and $783 million, which generated tax benefits of $50 million, $39 million and $48 million, respectively.

In fiscal 2021, the Company completed an intercompany transfer of certain of the Company’s intellectual property rights which resulted in a net tax charge of $417 million.

Impacts of Tax Legislation and Change in Statutory Tax Rates

On August 16, 2022, the U.S. enacted the Inflation Reduction Act (“IRA”) which, among other things, creates a new book minimum tax of at least 15% of consolidated GAAP pre-tax income for corporations with average book income in excess of $1 billion. The book minimum tax is first applicable in fiscal year 2024. The Company does not expect this provision to have a material impact on its effective tax rate.

In fiscal 2020, the Company recorded a noncash discrete tax charge of $30 million due to the remeasurement of deferred tax assets and liabilities related to Switzerland and the canton of Schaffhausen. On September 28, 2018, the Swiss Parliament approved the Federal Act on Tax Reform and AHV Financing (“TRAF”), which was subsequently approved by the Swiss electorate on May 19, 2019. During the fourth quarter of fiscal 2019, the Swiss Federal Council enacted TRAF which became effective for the Company on January 1, 2020. The impacts of the federal enactment did not have a material impact to the Company’s financial statements. TRAF also provides for parameters which enable the Swiss cantons to adjust tax rates and establish new regulations for companies. As of September 30, 2019, the canton of Schaffhausen had not concluded its public referendum; however, the enactment did occur during the first quarter of fiscal 2020.

During the fiscal years ended 2022, 2021 and 2020, other tax legislation was adopted in various jurisdictions. These law changes did not have a material impact on the Company's consolidated financial statements.

Continuing Operations

Selected income tax data related to continuing operations were as follows (in millions):

	2022	2021	2020
Components of income (loss) from continuing operations before income taxes:			
U.S.	$ 67	$ 543	$ (385)
Non-U.S.	1,643	2,071	1,288
Income from continuing operations before income taxes	$ 1,710	$ 2,614	$ 903
Components of the provision (benefit) for income taxes:			
Current			
U.S. federal	$ (219)	$ 459	$ 309
U.S. state	53	108	72
Non-U.S.	294	265	264
	128	832	645
Deferred			
U.S. federal	(175)	(7)	(382)
U.S. state	(69)	46	(43)
Non-U.S.	103	(3)	(112)
	(141)	36	(537)
Income tax provision (benefit)	$ (13)	$ 868	$ 108
Income taxes paid (refunded)	$ 568	$ 504	$ (386)

At September 30, 2022 and 2021, the Company recorded within the consolidated statements of financial position in other current assets approximately $253 million and $120 million, respectively, of income tax assets. At September 30, 2022 and 2021, the Company recorded within the consolidated statements of financial position in other current liabilities approximately $143 million and $201 million, respectively, of accrued income tax liabilities.

The Company has not provided U.S. or non-U.S. income taxes on approximately $23.6 billion of outside basis differences of consolidated subsidiaries of Johnson Controls International plc. The Company is indefinitely reinvested in these basis differences. The reduction of the outside basis differences via the sale or liquidation of these subsidiaries and/or distributions could create taxable income. The Company's intent is to reduce the outside basis differences only when it would be tax efficient. Given the numerous ways in which the basis differences may be reduced, it is not practicable to estimate the amount of unrecognized withholding taxes and deferred tax liability on the outside basis differences.

Deferred taxes were classified in the consolidated statements of financial position as follows (in millions):

	September 30, 2022	September 30, 2021
Other noncurrent assets	$ 944	$ 755
Other noncurrent liabilities	(500)	(443)
Net deferred tax asset	$ 444	$ 312

Temporary differences and carryforwards which gave rise to deferred tax assets and liabilities included (in millions):

	September 30, 2022	September 30, 2021
Deferred tax assets		
Accrued expenses and reserves	$ 376	$ 407
Employee and retiree benefits	77	148
Property, plant and equipment	444	369
Net operating loss and other credit carryforwards	6,472	6,293
Research and development	52	42
Operating lease liabilities	309	334
Other, net	58	28
	7,788	7,621
Valuation allowances	(5,967)	(5,853)
	1,821	1,768
Deferred tax liabilities		
Subsidiaries, joint ventures and partnerships	338	346
Intangible assets	730	776
Operating lease right-of-use assets	309	334
	1,377	1,456
Net deferred tax asset	$ 444	$ 312

At September 30, 2022, the Company had available net operating loss carryforwards of approximately $24.3 billion, of which $14.0 billion will expire at various dates between 2023 and 2042, and the remainder has an indefinite carryforward period. The Company had available U.S. foreign tax credit carryforwards at September 30, 2022 of $35 million which will expire in 2029. The valuation allowance, generally, is for loss and credit carryforwards for which realization is uncertain because it is unlikely that the losses and/or credits will be realized given the lack of sustained profitability and/or limited carryforward periods in certain countries.

19. SEGMENT INFORMATION

ASC 280, "Segment Reporting," establishes the standards for reporting information about segments in financial statements. In applying the criteria set forth in ASC 280, the Company has determined that it has four reportable segments for financial reporting purposes.

Building Solutions North America: Building Solutions North America designs, sells, installs and services HVAC, controls, building management, refrigeration, integrated electronic security and integrated fire-detection and suppression systems for commercial, industrial, retail, small business, institutional and governmental customers in the United States and Canada. Building Solutions North America also provides energy efficiency solutions and technical services, including inspection, scheduled maintenance, and repair and replacement of mechanical and controls systems, as well as data-driven “smart building” solutions, to non-residential building and industrial applications in the United States and Canadian marketplace.

Building Solutions EMEA/LA: Building Solutions EMEA/LA designs, sells, installs and services HVAC, controls, building management, refrigeration, integrated electronic security, integrated fire-detection and suppression systems, and provides technical services, including data-driven “smart building” solutions, to markets in Europe, the Middle East, Africa and Latin America.

Building Solutions Asia Pacific: Building Solutions Asia Pacific designs, sells, installs and services HVAC, controls, building management, refrigeration, integrated electronic security, integrated fire-detection and suppression systems, and provides technical services, including data-driven “smart building” solutions, in the Asia Pacific marketplace.

Global Products: Global Products designs, manufactures and sells HVAC equipment, controls software and software services for residential and commercial applications to commercial, industrial, retail, residential, small business, institutional and governmental customers worldwide. In addition, Global Products designs, manufactures and sells refrigeration equipment and controls globally. The Global Products business also designs, manufactures and sells fire protection, fire suppression and security products, including intrusion security, anti-theft devices, access control, and video surveillance and management systems, for commercial, industrial, retail, residential, small business, institutional and governmental customers worldwide. Global Products includes the Johnson Controls-Hitachi joint venture.

Effective October 1, 2021, the Company's marine businesses previously included in the Building Solutions Asia Pacific and Global Products reportable segments became part of the Building Solutions EMEA/LA reportable segment. Historical information has been re-cast to present the comparative periods on a consistent basis. This change was not material to the segment presentation or the allocation of goodwill.

Management evaluates the performance of its business segments primarily on segment earnings before interest, taxes and amortization ("EBITA"), which represents income from continuing operations before income taxes and noncontrolling interests, excluding general corporate expenses, intangible asset amortization, net financing charges, restructuring and impairment costs, and net mark-to-market adjustments related to pension and postretirement plans and restricted asbestos investments.

Financial information relating to the Company's reportable segments is as follows (in millions):

	Year Ended September 30,		
	2022	2021	2020
Net Sales			
Building Solutions North America	$ 9,367	$ 8,685	$ 8,605
Building Solutions EMEA/LA	3,845	3,884	3,613
Building Solutions Asia Pacific	2,714	2,616	2,368
Global Products	9,373	8,483	7,731
Total net sales	$ 25,299	$ 23,668	$ 22,317

	Year Ended September 30,		
	2022	2021	2020
Segment EBITA (1)			
Building Solutions North America	$ 1,122	$ 1,204	$ 1,157
Building Solutions EMEA/LA	358	401	349
Building Solutions Asia Pacific	332	344	314
Global Products	1,594	1,436	1,128
Total segment EBITA	$ 3,406	$ 3,385	$ 2,948
Amortization of intangible assets	(427)	(435)	(386)
Corporate expenses	(369)	(290)	(371)
Net financing charges	(213)	(206)	(231)
Restructuring and impairment costs	(721)	(242)	(783)
Net mark-to-market adjustments	34	402	(274)
Income from continuing operations before income taxes	$ 1,710	$ 2,614	$ 903

	September 30,		
	2022	2021	2020
Assets [2]			
Building Solutions North America	$ 14,429	$ 15,317	$ 15,215
Building Solutions EMEA/LA	4,766	5,397	5,159
Building Solutions Asia Pacific	2,424	2,728	2,662
Global Products	15,185	15,227	13,770
	36,804	38,669	36,806
Assets held for sale	1,138	156	147
Unallocated	4,216	3,065	3,862
Total	$ 42,158	$ 41,890	$ 40,815

	Year Ended September 30,		
	2022	2021	2020
Depreciation/Amortization			
Building Solutions North America	$ 213	$ 245	$ 233
Building Solutions EMEA/LA	96	103	102
Building Solutions Asia Pacific	21	25	24
Global Products	461	432	414
	791	805	773
Corporate	39	40	49
Total	$ 830	$ 845	$ 822

	Year Ended September 30,		
	2022	2021	2020
Capital Expenditures			
Building Solutions North America	$ 141	$ 87	$ 93
Building Solutions EMEA/LA	119	128	99
Building Solutions Asia Pacific	22	31	36
Global Products	257	265	191
	539	511	419
Corporate	53	41	24
Total	$ 592	$ 552	$ 443

(1) For the years ended September 30, 2022, 2021 and 2020, segment EBITA includes $240 million, $250 million and $166 million, respectively, of equity income for the Global Products segment. Equity income for other segments is immaterial.

(2) Building Solutions EMEA/LA assets as of September 30, 2022, 2021 and 2020 include $115 million, $111 million and $108 million, respectively, of investments in partially-owned affiliates. Global Products assets as of September 30, 2022, 2021 and 2020 include $834 million, $945 million and $797 million, respectively, of investments in partially-owned affiliates. Investments in partially-owned affiliates for other segments is immaterial.

In fiscal 2022, 2021 and 2020, no customer exceeded 10% of consolidated net sales.

Geographic Segments

Financial information relating to the Company's operations by geographic area is as follows (in millions):

	Year Ended September 30,		
	2022	2021	2020
Net Sales			
United States	$ 12,864	$ 11,577	$ 11,371
Europe	4,186	4,069	3,523
Asia Pacific	5,791	5,748	5,285
Other Non-U.S.	2,458	2,274	2,138
Total	$ 25,299	$ 23,668	$ 22,317
Long-Lived Assets (Year-end)			
United States	$ 1,573	$ 1,638	$ 1,713
Europe	412	436	278
Asia Pacific	656	727	667
Other Non-U.S.	401	427	401
Total	$ 3,042	$ 3,228	$ 3,059

Net sales attributed to geographic locations are based on the location of where the sale originated. Long-lived assets by geographic location consist of net property, plant and equipment.

20. GUARANTEES

Certain of the Company's subsidiaries at the business segment level have guaranteed the performance of third-parties and provided financial guarantees for uncompleted work and financial commitments. The terms of these guarantees vary with end dates ranging from the current fiscal year through the completion of such transactions and would typically be triggered in the event of nonperformance. Performance under the guarantees, if required, would not have a material effect on the Company's financial position, results of operations or cash flows.

The Company offers warranties to its customers depending upon the specific product and terms of the customer purchase agreement. A typical warranty program requires that the Company replace defective products within a specified time period from the date of sale. The Company records an estimate for future warranty-related costs based on actual historical return rates and other known factors. Based on analysis of return rates and other factors, the Company's warranty provisions are adjusted as necessary. The Company monitors its warranty activity and adjusts its reserve estimates when it is probable that future warranty costs will be different than those estimates.

The Company's product warranty liability is recorded in the consolidated statements of financial position in other current liabilities if the warranty is less than one year and in other noncurrent liabilities if the warranty extends longer than one year.

The changes in the carrying amount of the Company's total product warranty liability were as follows (in millions).

	Year Ended September 30,	
	2022	2021
Balance at beginning of period	$ 192	$ 167
Accruals for warranties issued during the period	119	91
Accruals from acquisitions and divestitures	(1)	—
Changes in estimates to pre-existing warranties	(6)	11
Settlements made (in cash or in kind) during the period	(114)	(77)
Currency translation	(11)	—
Balance at end of period	$ 179	$ 192

21. COMMITMENTS AND CONTINGENCIES

Environmental Matters

The Company accrues for potential environmental liabilities when it is probable a liability has been incurred and the amount of the liability is reasonably estimable. The following table presents the location and amount of reserves for environmental liabilities in the Company's consolidated statements of financial position (in millions):

	September 30,	
	2022	2021
Other current liabilities	$ 66	$ 48
Other noncurrent liabilities	220	54
Total reserves for environmental liabilities	$ 286	$ 102

The Company periodically examines whether the contingent liabilities related to the environmental matters described below are probable and reasonably estimable based on experience and ongoing developments in those matters, including continued study and analysis of ongoing remediation obligations. During the three months ended September 30, 2022, with the assistance of independent environmental consultants and taking into consideration investigation and remediation actions previously completed, new information available to the Company during the fourth quarter of 2022 and ongoing discussions with the Wisconsin Department of Natural Resources ("WDNR"), the Company completed a comprehensive long-term analysis and cost assessment related to the Company's ongoing environmental remediation obligations. As a result of this analysis, the Company increased its accrual for environmental liabilities by $228 million, which are recorded on an undiscounted basis. The Company expects that it will pay the amounts recorded over an estimated period of up to 20 years. The Company is not able to estimate a possible loss or range of loss, if any, in excess of the established accruals for environmental liabilities at this time.

A substantial portion of the increase to the Company's environmental reserves relates to ongoing long-term remediation efforts to address contamination relating to fire-fighting foams containing perfluorooctane sulfonate ("PFOS"), perfluorooctanoic acid ("PFOA"), and/or other per- and poly-fluoroalkyl substances ("PFAS") at or near the Tyco Fire Products L.P. ("Tyco Fire Products") Fire Technology Center ("FTC") located in Marinette, Wisconsin and surrounding areas in the City of Marinette and Town of Peshtigo, Wisconsin, as well as the continued remediation of PFAS, arsenic and other contaminants at the Tyco Fire Products Stanton Street manufacturing facility also located in Marinette, Wisconsin (the "Stanton Street Facility"). The increase in reserves was recorded as a result of several events that occurred in the three months ended September 30, 2022, including the completion and testing of the Groundwater Extraction and Treatment System ("GETS") at the FTC (as further discussed below), the completion of resident surveys in Peshtigo regarding long-term drinking water solutions, correspondence with regulators on planned remediation activities, finalization of cost estimates for system upgrades and related long-term run rate costs in response to new permit requirements at the Stanton Street Facility, and the development of additional information through ongoing investigation and analysis. These events have allowed the Company to develop estimates of costs associated with the long-term remediation actions expected to be performed over an estimated period of up to 20 years, including the continued operation of the GETS, the implementation of long-term drinking water solutions, continued monitoring and testing of the wells, the operation and wind-down of other legacy remediation and treatment systems and the completion of ongoing investigation obligations.

The use of fire-fighting foams at the FTC was primarily for training and testing purposes to ensure that such products sold by the Company's affiliates, Chemguard, Inc. ("Chemguard") and Tyco Fire Products, were effective at suppressing high intensity fires that may occur at military installations, airports or elsewhere. In May 2021, as part of Tyco Fire Products' ongoing investigation and remediation program, the WDNR approved Tyco Fire Products' proposed GETS, a permanent groundwater remediation system that will extract groundwater that contains PFAS, treat it using advanced filtration systems, and return the treated water to the environment. Tyco Fire Products has completed construction of the GETS, which is now in operation. Tyco Fire Products is also in the process of completing the removal and disposal of PFAS-affected soil from the FTC.

Tyco Fire Products has been engaged in remediation activities at the Stanton Street Facility since 1990. Its corporate predecessor, Ansul Incorporated ("Ansul") manufactured arsenic-based agricultural herbicides at the Stanton Street Facility, which resulted in significant arsenic contamination of soil and groundwater on the site and in parts of the adjoining Menominee River. In 2009, Ansul entered into an Administrative Consent Order (the "Consent Order") with the U.S. Environmental Protection Agency ("EPA") to address the presence of arsenic at the site. Under this agreement, Tyco Fire Products' principal obligations are to contain the arsenic contamination on the site, pump and treat on-site groundwater, dredge, treat and properly dispose of contaminated sediments in the adjoining river areas, and monitor contamination levels on an ongoing basis.

Activities completed under the Consent Order since 2009 include the installation of a subsurface barrier wall around the facility to contain contaminated groundwater, the installation of a groundwater extraction and treatment system and the dredging and offsite disposal of treated river sediment. In addition to ongoing remediation activities, the Company is also working with the WDNR to investigate and remediate the presence of PFAS at or near the Stanton Street Facility as part of the evaluation and remediation of PFAS in the Marinette region.

PFOA, PFOS, and other PFAS compounds are being studied by EPA and other environmental and health agencies and researchers. EPA has not issued binding regulatory limits, but had initially stated that it would propose regulatory standards for PFOS and PFOA in drinking water by the end of 2019, in accordance with its PFAS Action Plan released in February 2019, and issued interim recommendations for addressing PFOA and PFOS in groundwater in December 2019. In March 2021, EPA published its final determination to regulate PFOS and PFOA in drinking water. While those studies continue, EPA issued in June 2022 an updated set of interim health advisory levels for PFOA and PFOS in drinking water, as well as final health advisory levels for two other types of PFAS (PFBS and GenX chemicals). In November 2022, EPA added a class definition of PFAS to the final version of EPA's fifth Contaminant Candidate List (CCL 5), which is a list of substances not currently subject to national drinking water regulation, but which EPA believes may require future regulation.

In October 2021, EPA released its "PFAS Strategic Roadmap: EPA's Commitments to Action 2021-2024." The 2021-2024 Roadmap sets timelines by which EPA plans to take specific actions, including, among other items, publishing a national PFAS testing strategy, proposing to designate PFOA and PFOS as Comprehensive Environmental Response, Compensation and Liability Act hazardous substances, restricting PFAS discharges from industrial sources through Effluent Limitations Guidelines, publishing the final toxicity assessment for five additional PFAS, requiring water systems to test for 29 PFAS under the Safe Drinking Water Act, and publishing improved analytical methods in eight different environmental matrices to monitor 40 PFAS present in wastewater and stormwater discharges. Both PFOA and PFOS are types of synthetic chemical compounds that have been present in firefighting foam. However, both are also present in many existing consumer products. According to EPA, PFOA and PFOS have been used to make carpets, clothing, fabrics for furniture, paper packaging for food and other materials (e.g., cookware) that are resistant to water, grease or stains. In August 2022, EPA published a proposed rule that would designate PFOA and PFOS as “hazardous substances” under CERCLA.

It is difficult to estimate the Company’s ultimate level of liability at many remediation sites due to the large number of other parties that may be involved, the complexity of determining the relative liability among those parties, the financial viability of other potentially responsible parties and third-party indemnitors, the uncertainty as to the nature and scope of the investigations and remediation to be conducted, changes in environmental regulations, changes in permissible levels of specific compounds in drinking water sources, or changes in enforcement theories and policies, including efforts to recover natural resource damages, the uncertainty in the application of law and risk assessment, the various choices and costs associated with diverse technologies that may be used in corrective actions at the sites, and the often quite lengthy periods over which eventual remediation may occur. It is possible that technological, regulatory or enforcement developments, the results of additional environmental studies or other factors could change the Company's expectations with respect to future charges and cash outlays, and such changes could be material to the Company's future results of operations, financial condition or cash flows. Nevertheless, the Company does not currently believe that any claims, penalties or costs in addition to the amounts accrued will have a material adverse effect on the Company’s financial position, results of operations or cash flows.

In addition, the Company has identified asset retirement obligations for environmental matters that are expected to be addressed at the retirement, disposal, removal or abandonment of existing owned facilities. Conditional asset retirement obligations were $17 million and $29 million at September 30, 2022 and 2021, respectively.

FTC-Related Remediation and Litigation

On June 21, 2019, the WDNR announced that it had received from the Wisconsin Department of Health Services (“WDHS”) a recommendation for groundwater quality standards as to, among other compounds, PFOA and PFOS. The WDHS recommended a groundwater enforcement standard for PFOA and PFOS of 20 parts per trillion. Although Wisconsin recently approved final regulatory standards for PFOA and PFOS in drinking water and surface water, the Wisconsin Natural Resources Board did not approve WDNR's proposed standards for PFOA and PFOS in groundwater. In September 2022, the Governor of Wisconsin signed a scope statement setting out parameters for the WDNR to draft a final rule regarding groundwater quality standards for PFOA and PFOS, among other compounds. The WDNR is now in the process of drafting the rule.

In July 2019, the Company received a letter from the WDNR directing the expansion of the evaluation of PFAS in the Marinette region to include (1) biosolids sludge produced by the City of Marinette Waste Water Treatment Plant and spread on certain fields in the area and (2) the Menominee and Peshtigo Rivers. Tyco Fire Products responded to the WDNR’s letter by requesting additional necessary information. On October 16, 2019, the WDNR issued a “Notice of Noncompliance” to Tyco

Fire Products and Johnson Controls, Inc. regarding the WDNR's July 3, 2019 letter. The WDNR issued a further letter regarding the issue on November 4, 2019. In February 2020, the WDNR sent a letter to Tyco Fire Products and Johnson Controls, Inc. further directing the expansion of the evaluation of PFAS in the Marinette region to include investigation activities south and west of the previously defined FTC study area. In September 2021, the WDNR sent an additional "Notice of Noncompliance" to Tyco Fire Products and Johnson Controls, Inc. concerning land-applied biosolids, which reviewed and responded to the Company's biosolids investigation conducted to date. Tyco Fire Products responded to the WDNR's September 2021 notice by the December 27, 2021 deadline set by WDNR and submitted a Land Applied Biosolids Interim Site Status Update Report to WDNR on October 25, 2022. Tyco Fire Products and Johnson Controls, Inc. believe that they have complied with all applicable environmental laws and regulations. The Company cannot predict what regulatory or enforcement actions, if any, might result from the WDNR's actions, or the consequences of any such actions.

In March 2022, the Wisconsin Department of Justice ("WDOJ") filed a civil enforcement action against Johnson Controls Inc. and Tyco Fire Products in Wisconsin state court relating to environmental matters at the FTC (*State of Wisconsin v. Tyco Fire Products, LP and Johnson Controls, Inc.*, Case No. 22-CX-1 (filed March 14, 2022 in Circuit Court in Marinette County, Wisconsin)). The WDOJ alleges that the Company failed to timely report the presence of PFAS chemicals at the FTC, and that the Company has not sufficiently investigated or remediated PFAS at or near the FTC. The WDOJ seeks monetary penalties and an injunction ordering these two subsidiaries to complete a site investigation and cleanup of PFAS contamination in accordance with the WDNR's requests. The lawsuit is presently at the beginning stages of litigation. Tyco Fire Products and Johnson Controls, Inc. each filed Answers to the Complaint on April 4, 2022 and the parties are proceeding with initial fact discovery. The Company is vigorously defending this civil enforcement action and believes that it has meritorious defenses, but the Company is presently unable to predict the duration, scope, or outcome of this action.

In October 2022, the Town of Peshtigo filed a tort action in Wisconsin state court against Tyco Fire Products, Johnson Controls Inc., Chemguard, Inc., and ChemDesign, Inc. relating to environmental matters at the FTC (*Town of Peshtigo v. Tyco Fire Products L.P. et al.*, Case No. 2022CV000234 (filed October 18, 2022 in Circuit Court in Marinette County, Wisconsin)). The town alleges that use of AFFF products at the FTC caused contamination of water supplies in Peshtigo. The town seeks monetary penalties and an injunction ordering abatement of PFAS contamination in Peshtigo. The lawsuit is presently at the beginning stages of litigation. The Company was served with the operative complaint on October 21, 2022. The Company plans to vigorously defend against this case and believes that it has meritorious defenses, but the Company is presently unable to predict the duration, scope, or outcome of this action.

Aqueous Film-Forming Foam ("AFFF") Litigation

Two of the Company's subsidiaries, Chemguard and Tyco Fire Products, have been named, along with other defendant manufacturers, suppliers and distributors, and, in some cases, certain subsidiaries of the Company affiliated with Chemguard and Tyco Fire Products, in a number of class action and other lawsuits relating to the use of fire-fighting foam products by the U.S. Department of Defense (the "DOD") and others for fire suppression purposes and related training exercises. Plaintiffs generally allege that the firefighting foam products contain or break down into the chemicals PFOS and PFOA and/or other PFAS compounds and that the use of these products by others at various airbases, airports and other sites resulted in the release of these chemicals into the environment and ultimately into communities' drinking water supplies neighboring those airports, airbases and other sites. Plaintiffs generally seek compensatory damages, including damages for alleged personal injuries, medical monitoring, diminution in property values, investigation and remediation costs, and natural resources damages, and also seek punitive damages and injunctive relief to address remediation of the alleged contamination.

In September 2018, Tyco Fire Products and Chemguard filed a Petition for Multidistrict Litigation with the United States Judicial Panel on Multidistrict Litigation ("JPML") seeking to consolidate all existing and future federal cases into one jurisdiction. On December 7, 2018, the JPML issued an order transferring various AFFF cases to a multi-district litigation ("MDL") before the United States District Court for the District of South Carolina. Additional cases have been identified for transfer to or are being directly filed in the MDL.

AFFF Putative Class Actions

Chemguard and Tyco Fire Products are named in 33 pending putative class actions in federal courts originating from Colorado, Florida, Massachusetts, New York, Pennsylvania, Washington, New Hampshire, South Carolina, the District of Columbia, Guam, West Virginia, Michigan, Texas and South Dakota. All of these cases except one have been direct-filed in or transferred to the MDL, and the remaining action was recently removed to federal court and will be tagged for transfer to the MDL shortly.

AFFF Individual or Mass Actions

There are more than 2,900 individual or "mass" actions pending that were filed in state or federal court in various states including California, Colorado, New York, Pennsylvania, New Mexico, Missouri, Arizona, Texas, and South Carolina against Chemguard and Tyco Fire Products and other defendants in which the plaintiffs generally seek compensatory damages, including damages for alleged personal injuries, medical monitoring, and alleged diminution in property values. The cases involve plaintiffs from various states including approximately 7,000 plaintiffs in Colorado and more than 2,900 other plaintiffs. The vast majority of these matters have been tagged for transfer to, transferred to, or directly-filed in the MDL, and it is anticipated that several newly-filed state court actions will be similarly tagged and transferred. There are several matters that are proceeding in state courts, including actions in Arizona, Illinois, and Texas.

Tyco and Chemguard are also periodically notified by other individuals that they may assert claims regarding PFOS and/or PFOA contamination allegedly resulting from the use of AFFF.

AFFF Municipal and Water Provider Cases

Chemguard and Tyco Fire Products have been named as defendants in more than 250 cases in federal and state courts involving municipal or water provider plaintiffs in various states including Alaska, Alabama, Arizona, California, Colorado, Connecticut, Florida, Idaho, Illinois, Kentucky, Louisiana, Maryland, Massachusetts, Michigan, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Virginia, Washington, West Virginia, Wisconsin, the District of Columbia, and several municipalities or water providers from various states who direct-filed complaints in South Carolina. The vast majority of these cases have been transferred to or directly filed in the MDL, and it is anticipated that the remaining cases will be transferred to the MDL. These municipal plaintiffs generally allege that the use of the defendants' fire-fighting foam products at fire training academies, municipal airports, Air National Guard bases, or Navy or Air Force bases released PFOS and PFOA into public water supply wells, allegedly requiring remediation of public property.

Tyco and Chemguard are also periodically notified by other municipal entities that those entities may assert claims regarding PFOS and/or PFOA contamination allegedly resulting from the use of AFFF.

State or U.S. Territory Attorneys General Litigation related to AFFF

In June 2018, the State of New York filed a lawsuit in New York state court (*State of New York v. The 3M Company et al* No. 904029-18 (N.Y. Sup. Ct., Albany County)) against a number of manufacturers, including affiliates of the Company, with respect to alleged PFOS and PFOA contamination purportedly resulting from firefighting foams used at locations across New York, including Stewart Air National Guard Base in Newburgh and Gabreski Air National Guard Base in Southampton, Plattsburgh Air Force Base in Plattsburgh, Griffiss Air Force Base in Rome, and unspecified "other" sites throughout the State. The lawsuit seeks to recover costs and natural resource damages associated with contamination at these sites. This suit has been removed to the United States District Court for the Northern District of New York and transferred to the MDL.

In February 2019, the State of New York filed a second lawsuit in New York state court (*State of New York v. The 3M Company et al* (N.Y. Sup. Ct., Albany County)), against a number of manufacturers, including affiliates of the Company, with respect to alleged PFOS and PFOA contamination purportedly resulting from firefighting foams used at additional locations across New York. This suit has been removed to the United States District Court for the Northern District of New York and transferred to the MDL. In July 2019, the State of New York filed a third lawsuit in New York state court (*State of New York v. The 3M Company et al* (N.Y. Sup. Ct., Albany County)), against a number of manufacturers, including affiliates of the Company, with respect to alleged PFOS and PFOA contamination purportedly resulting from firefighting foams used at further additional locations across New York. This suit has been removed to the United States District Court for the Northern District of New York and transferred to the MDL. In November 2019, the State of New York filed a fourth lawsuit in New York state court (*State of New York v. The 3M Company et al* (N.Y. Sup. Ct., Albany County)), against a number of manufacturers, including affiliates of the Company, with respect to alleged PFOS and PFOA contamination purportedly resulting from firefighting foams used at further additional locations across New York. This suit has been removed to federal court and transferred to the MDL.

In January 2019, the State of Ohio filed a lawsuit in Ohio state court (*State of Ohio v. The 3M Company et al.*, No. G-4801-CI-021804752-000 (Court of Common Pleas of Lucas County, Ohio)) against a number of manufacturers, including affiliates of the Company, with respect to PFOS and PFOA contamination allegedly resulting from the use of firefighting foams at various specified and unspecified locations across Ohio. The lawsuit seeks to recover costs and natural resource damages associated with the contamination. This lawsuit has been removed to the United States District Court for the Northern District of Ohio and transferred to the MDL.

In addition, in May and June 2019, three other states filed lawsuits in their respective state courts against a number of manufacturers, including affiliates of the Company, with respect to PFOS and PFOA contamination allegedly resulting from the use of firefighting foams at various specified and unspecified locations across their jurisdictions (*State of New Hampshire v. The 3M Company et al.*; *State of Vermont v. The 3M Company et al*.; *State of New Jersey v. The 3M Company et al*.). All three of these suits have been removed to federal court and transferred to the MDL.

In September 2019, the government of Guam filed a lawsuit in the superior court of Guam against a number of manufacturers, including affiliates of the Company, with respect to PFOS and PFOA contamination allegedly resulting from the use of firefighting foams at various locations within its jurisdiction. This complaint has been removed to federal court and transferred to the MDL.

In November 2019, the government of the Commonwealth of the Northern Mariana Islands filed a lawsuit in the superior court of the Northern Mariana Islands against a number of manufacturers, including affiliates of the Company, with respect to PFOS and PFOA contamination allegedly resulting from the use of firefighting foams at various locations within its jurisdiction. This complaint has been removed to federal court and transferred to the MDL.

In August 2020, the Attorney General of the State of Michigan filed two substantially similar lawsuits—one in federal court and one in state court—against a number of manufacturers, including affiliates of the Company, with respect to PFOS and PFOA contamination allegedly resulting from the use of firefighting foams at various locations within the State. The federal action has been transferred to the MDL, and the state court action has been removed to federal court and transferred to the MDL.

In December 2020, the State of Mississippi filed a lawsuit against a number of manufacturers and other defendants, including affiliates of the Company, with respect to PFOS and PFOA damage of the State’s land and natural resources allegedly resulting from the use of firefighting foams at various locations throughout the State. This complaint was direct-filed in the MDL in South Carolina.

In April 2021, the State of Alaska filed a lawsuit in the superior court of the State of Alaska against a number of manufacturers and other defendants, including affiliates of the Company, with respect to PFOS and PFOA damage of the State’s land and natural resources allegedly resulting from the use of firefighting foams at various locations throughout the State. The State’s case has been removed to federal court and transferred to the MDL. The State of Alaska has also named a number of manufacturers and other defendants, including affiliates of the Company, as third-party defendants in two cases brought by individuals against the State. These two cases have also been transferred to the MDL.

In early November 2021, the Attorney General of the State of North Carolina filed four individual lawsuits in the superior courts of the State of North Carolina against a number of manufacturers and other defendants, including affiliates of the Company, with respect to PFOS and PFOA damage of the State’s land, natural resources, and property allegedly resulting from the use of firefighting foams at four separate locations throughout the State. These four cases have been removed to federal court and transferred to the MDL. In October 2022, the Attorney General filed two similar lawsuits in the superior courts of the State of North Carolina regarding alleged PFAS damages at two additional locations. It is anticipated that these two cases will be removed to federal court and transferred to the MDL.

In February 2022, the Attorney General of the State of Colorado filed a lawsuit in Colorado state court against a number of manufacturers and other defendants, including affiliates of the Company, with respect to PFOS and PFOA damage of the State's land and natural resources, public health, and State property allegedly resulting from the use of firefighting foams at various locations throughout the State. This complaint has been removed to federal court and transferred to the MDL.

In April 2022, the Attorney General of the State of Florida filed a lawsuit in Florida state court against a number of manufacturers and other defendants, including affiliates of the Company, with respect to PFOS and PFOA damage to the State's natural resources and public health allegedly resulting from the use of firefighting foams at various locations throughout the State. It is anticipated that this complaint will be removed to federal court and transferred to the MDL.

In May 2022, the Attorney General of the Commonwealth of Massachusetts filed a lawsuit against a number of manufacturers and other defendants, including affiliates of the Company, with respect to PFOS and PFOA damage of the State's natural resources, property, residents, and consumers allegedly resulting from the use of firefighting foams at various locations throughout the State. This complaint was direct-filed in the MDL in South Carolina.

In July 2022, the Attorney General of the State of Wisconsin filed a lawsuit in Wisconsin state court against a number of manufacturers and other defendants, including affiliates of the Company, with respect to PFAS damage to the State's natural resources and public health allegedly resulting, in part, from the use of firefighting foams at various locations throughout the State. This complaint has been removed to federal court and tagged for transfer to the MDL. The Attorney General has opposed transfer, and the parties are awaiting a decision from the JPML.

In November 2022, the Attorney General of the State of California filed a lawsuit in California state court against a number of manufacturers and other defendants, including affiliates of the Company, with respect to PFOS and PFOA damage of the State's land and natural resources allegedly resulting from the manufacture, use, marketing, or sale of PFAS-containing products, including firefighting foams, at various locations throughout the State. It is anticipated that this case will be removed to federal court and transferred to the MDL.

Other AFFF Related Matters

In March 2020, the Kalispel Tribe of Indians (a federally recognized Tribe) and two tribal corporations filed a lawsuit in the United States District Court for the Eastern District of Washington against a number of manufacturers, including affiliates of the Company, and the United States with respect to PFAS contamination allegedly resulting from the use and disposal of AFFF by the United States Air Force at and around Fairchild Air Force Base in eastern Washington. This case has been transferred to the MDL.

In October 2022, the Red Cliff Band of Lake Superior Chippewa Indians (a federally recognized tribe) filed a lawsuit in the United States District Court for the Western District of Wisconsin against a number of manufacturers, including affiliates of the Company, with respect to PFAS contamination allegedly resulting from the use and disposal of AFFF at Duluth Air National Guard Base in Duluth, Minnesota. This complaint has been transferred to the MDL.

The Company is vigorously defending the above matters and believes that it has meritorious defenses to class certification and the claims asserted, including statutes of limitations, the government contractor defense, various medical and scientific defenses, and other factual and legal defenses. The government contractor defense is a form of immunity available to government contractors that produced products for the United States government pursuant to the government's specifications. In September 2022, the AFFF MDL Court declined to grant summary judgment on the government contractor defense, ruling that various factual issues relevant to the defense must be decided by a jury rather than the Court. Tyco and Chemguard have insurance that has been in place for many years and the Company is pursuing this coverage for these matters. However, there are numerous factual and legal issues to be resolved in connection with these claims, and it is extremely difficult to predict the outcome or ultimate financial exposure, if any, represented by these matters, and there can be no assurance that any such exposure will not be material.

Asbestos Matters

The Company and certain of its subsidiaries, along with numerous other third parties, are named as defendants in personal injury lawsuits based on alleged exposure to asbestos containing materials. These cases have typically involved product liability claims based primarily on allegations of manufacture, sale or distribution of industrial products that either contained asbestos or were used with asbestos containing components.

The Company estimates the asbestos-related liability for pending and future claims and related defense costs on a discounted basis. In connection with the recognition of liabilities for asbestos-related matters, the Company records asbestos-related insurance recoveries that are probable.

The following table presents the location and amount of asbestos-related assets and liabilities in the Company's consolidated statements of financial position (in millions):

	September 30, 2022	September 30, 2021
Other current liabilities	$ 58	$ 58
Other noncurrent liabilities	380	400
Total asbestos-related liabilities	438	458
Other current assets	37	13
Other noncurrent assets	263	365
Total asbestos-related assets	300	378
Net asbestos-related liabilities	$ 138	$ 80

The following table presents the components of asbestos-related assets (in millions):

	September 30, 2022	September 30, 2021
Restricted		
Cash	$ 6	$ 6
Investments	239	314
Total restricted assets	245	320
Insurance recoveries for asbestos-related liabilities	55	58
Total asbestos-related assets	$ 300	$ 378

The Company's estimate of the liability and corresponding insurance recovery for pending and future claims and defense costs is based on the Company's historical claim experience, and estimates of the number and resolution cost of potential future claims that may be filed and is discounted to present value from 2068 (which is the Company's reasonable best estimate of the actuarially determined time period through which asbestos-related claims will be paid by Company affiliates). Estimated asbestos-related defense costs are included in the asbestos liability. The Company's legal strategy for resolving claims also impacts these estimates. The Company considers various trends and developments in evaluating the period of time (the look-back period) over which historical claim and settlement experience is used to estimate and value claims reasonably projected to be paid through 2068. At least annually, the Company assesses the sufficiency of its estimated liability for pending and future claims and defense costs by evaluating actual experience regarding claims filed, settled and dismissed, and amounts paid in settlements. In addition to claims and settlement experience, the Company considers additional quantitative and qualitative factors such as changes in legislation, the legal environment, and the Company's defense strategy. The Company also evaluates the recoverability of its insurance receivable on an annual basis. The Company evaluates all of these factors and determines whether a change in the estimate of its liability for pending and future claims and defense costs or insurance receivable is warranted.

The amounts recorded by the Company for asbestos-related liabilities and insurance-related assets are based on the Company's strategies for resolving its asbestos claims, currently available information, and a number of estimates and assumptions. Key variables and assumptions include the number and type of new claims that are filed each year, the average cost of resolution of claims, the identity of defendants, the resolution of coverage issues with insurance carriers, amount of insurance, and the solvency risk with respect to the Company's insurance carriers. Many of these factors are closely linked, such that a change in one variable or assumption may impact one or more of the others, and no single variable or assumption predominately influences the determination of the Company's asbestos-related liabilities and insurance-related assets. Furthermore, predictions with respect to these variables are subject to greater uncertainty in the later portion of the projection period. Other factors that may affect the Company's liability and cash payments for asbestos-related matters include uncertainties surrounding the litigation process from jurisdiction to jurisdiction and from case to case, reforms of state or federal tort legislation and the applicability of insurance policies among subsidiaries. As a result, actual liabilities or insurance recoveries could be significantly higher or lower than those recorded if assumptions used in the Company's calculations vary significantly from actual results.

Insurable Liabilities

The Company records liabilities for its workers' compensation, product, general and auto liabilities. The determination of these liabilities and related expenses is dependent on claims experience. For most of these liabilities, claims incurred but not yet reported are estimated by utilizing actuarial valuations based upon historical claims experience. The Company maintains captive insurance companies to manage its insurable liabilities.

The following table presents the location and amount of insurable liabilities in the Company's consolidated statements of financial position (in millions):

	September 30, 2022	September 30, 2021
Other current liabilities	$ 89	$ 77
Accrued compensation and benefits	22	22
Other noncurrent liabilities	230	226
Total insurable liabilities	$ 341	$ 325

The following table presents the location and amount of insurable receivables in the Company's consolidated statements of financial position (in millions):

	September 30, 2022	September 30, 2021
Other current assets	$ 10	$ 5
Other noncurrent assets	20	15
Total insurable receivables	$ 30	$ 20

Other Matters

The Company is involved in various lawsuits, claims and proceedings incident to the operation of its businesses, including those pertaining to product liability, environmental, safety and health, intellectual property, employment, commercial and contractual matters, and various other casualty matters. Although the outcome of litigation cannot be predicted with certainty and some lawsuits, claims or proceedings may be disposed of unfavorably to us, it is management’s opinion that none of these will have a material adverse effect on the Company’s financial position, results of operations or cash flows. Costs related to such matters were not material to the periods presented.

22. SUBSEQUENT EVENTS

In October 2022, the Company acquired Rescue Air Systems, a leading provider of firefighter air replenishment systems, for $100 million to enhance its Fire Suppression portfolio.

In October 2022, the Company repaid a €200 million ($196 million as of September 30, 2022) term loan with an interest rate of EURIBOR plus 0.5% and entered into a €150 million term loan with an interest rate of EURIBOR plus 0.7% which is due in April 2024.

In October 2022, a third party warehouse in Menominee, Michigan, at which the Company stores certain Global Products inventory related to its fire suppression business, was severely damaged by a fire. The fire originated at an adjacent location not owned or operated by the Company. The Company is evaluating the losses incurred, including inventory and other assets that were damaged or destroyed, as well as expected lost revenues and profits due to the business interruption. The Company believes losses will be at least partially covered by insurance and also plans to seek recovery from the responsible parties. The Company expects the majority of the financial impact will be recognized in the first quarter of fiscal 2023. Based on the current evaluation, the Company believes the warehouse fire will not have a material impact on fiscal 2023 financial results, financial position or cash flows.

JOHNSON CONTROLS INTERNATIONAL PLC AND SUBSIDIARIES
SCHEDULE II - VALUATION AND QUALIFYING ACCOUNTS
(In millions)

	Year Ended September 30,		
	2022	2021	2020
Accounts Receivable - Allowance for Expected Credit Losses [(1)]			
Balance at beginning of period	$ 110	$ 173	$ 173
Provision (income) charged to costs and expenses	(2)	(3)	20
Accounts charged off, net of recoveries	(38)	(65)	(21)
Currency translation	(3)	1	1
Other	(5)	4	—
Balance at end of period	$ 62	$ 110	$ 173
Deferred Tax Assets - Valuation Allowance			
Balance at beginning of period	$ 5,853	$ 5,518	$ 5,068
Allowance provision for new operating and other loss carryforwards	326	505	624
Allowance held for sale	(8)	—	—
Allowance benefits	(204)	(170)	(174)
Balance at end of period	$ 5,967	$ 5,853	$ 5,518

(1) Allowance for doubtful accounts as of September 30, 2020, prior to the adoption of ASU 2016-13.

ITEM 9 CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None.

ITEM 9A CONTROLS AND PROCEDURES

Disclosure Controls and Procedures

The Company’s management, with the participation of the Company’s Chief Executive Officer and Chief Financial Officer, has evaluated the effectiveness of the Company’s disclosure controls and procedures (as such term is defined in Rule 13a-15(e) under the Securities Exchange Act of 1934, as amended (the "Exchange Act")) as of the end of the period covered by this report. Based on such evaluations, the Company’s Chief Executive Officer and Chief Financial Officer have concluded that, as of the end of such period, the Company’s disclosure controls and procedures are effective in recording, processing, summarizing, and reporting, on a timely basis, information required to be disclosed by the Company in the reports that it files or submits under the Exchange Act, and that information is accumulated and communicated to the Company’s management, including the Company’s Chief Executive Officer and Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosure.

Management’s Report on Internal Control Over Financial Reporting

The Company’s management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Exchange Act Rule 13a-15(f). The Company’s management, with the participation of the Company’s Chief Executive Officer and Chief Financial Officer, has evaluated the effectiveness of the Company’s internal control over financial reporting based on the framework in Internal Control-Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on this evaluation, the Company’s management has concluded that, as of September 30, 2022, the Company’s internal control over financial reporting was effective.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

PricewaterhouseCoopers LLP, an independent registered public accounting firm, has audited the Company's consolidated financial statements and the effectiveness of internal control over financial reporting as of September 30, 2022 as stated in its report which is included in Item 8 of this Form 10-K and is incorporated by reference herein.

Changes in Internal Control Over Financial Reporting

There have been no changes in the Company's internal control over financial reporting during the quarter ended September 30, 2022, that have materially affected, or are reasonably likely to materially affect, the Company's internal control over financial reporting.

ITEM 9B OTHER INFORMATION

None.

ITEM 9C DISCLOSURE REGARDING FOREIGN JURISDICTIONS THAT PREVENT INSPECTIONS

None.

PART III

In response to Part III, Items 10, 11, 12, 13 and 14, parts of the Company's definitive proxy statement (to be filed pursuant to Regulation 14A within 120 days after Registrant's fiscal year-end of September 30, 2022) for its annual meeting to be held on March 8, 2023, are incorporated by reference in this Form 10-K.

ITEM 10 DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The information relating to directors and nominees of Johnson Controls is set forth under the caption "Proposal Number One" in Johnson Controls' proxy statement for its annual meeting of shareholders to be held on March 8, 2023 (the "Johnson Controls Proxy Statement") and is incorporated by reference herein. Information about executive officers is included in Part I, Item 4 of this Annual Report on Form 10-K. The information required by Items 405, 407(c)(3), (d)(4) and (d)(5) of Regulation S-K is contained under the captions "Governance of the Company - Nomination of Directors and Board Diversity," "Governance of the Company - Board Committees", and "Committees of the Board - Audit Committee" of the Johnson Controls Proxy Statement and such information is incorporated by reference herein.

Code of Ethics

Johnson Controls has adopted a code of ethics for directors, officers (including the Company's principal executive officer, principal financial officer and principal accounting officer) and employees, known as Values First, The Johnson Controls Code of Ethics. The Code of Ethics is available on the Company's website at www.valuesfirst.johnsoncontrols.com. The Company posts any amendments to or waivers of its Code of Ethics (to the extent applicable to the Company's directors or executive officers) at the same location on the Company's website. In addition, copies of the Code of Ethics may be obtained in print without charge upon written request by any stockholder to the office of the Company at One Albert Quay, Cork, Ireland.

ITEM 11 EXECUTIVE COMPENSATION

The information required by Item 402 of Regulation S-K is contained under the captions "Compensation Discussion & Analysis" (excluding the information under the caption "Compensation Committee Report on Executive Compensation"), "Executive Compensation Tables" and "Compensation of Non-Employee Directors" of the Johnson Controls Proxy Statement. Such information is incorporated by reference.

The information required by Items 407(e)(4) and (e)(5) of Regulation S-K is contained under the captions "Committees of the Board - Compensation Committee Interlocks and Insider Participation" and "Compensation Discussion & Analysis - Compensation Committee Report on Executive Compensation" of the Johnson Controls Proxy Statement. Such information (other than the Compensation Committee Report on Executive Compensation, which shall not be deemed to be "filed") is incorporated by reference.

ITEM 12 SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

The information in the Johnson Controls Proxy Statement set forth under the caption "Security Ownership of Certain Beneficial Owners and Management" is incorporated herein by reference.

On March 10, 2021, the shareholders of the Company approved the Johnson Controls International plc 2021 Equity and Incentive Plan, which terminated the Johnson Controls International plc 2012 Share and Incentive Plan, as amended in September 2016 (collectively, the "Plans"). Both Plans authorize stock options, stock appreciation rights, restricted (non-vested) stock/units, performance shares, performance units and other stock-based awards. The Compensation and Talent Development Committee of the Company's Board of Directors determines the types of awards to be granted to individual participants and the terms and conditions of the awards.

The following table provides information about the Company's equity compensation plans as of September 30, 2022:

	(a)	(b)	(c)
Plan Category	Number of Securities to be Issued upon Exercise of Outstanding Options, Warrants and Rights	Weighted-Average Exercise Price of Outstanding Options, Warrants and Rights	Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans (Excluding Securities Reflected in Column (a))
Equity compensation plans approved by shareholders	5,683,847	$ 42.46	53,652,821
Equity compensation plans not approved by shareholders	—	—	—
Total	5,683,847	$ 42.46	53,652,821

ITEM 13 CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

The information in the Johnson Controls Proxy Statement set forth under the captions “Committees of the Board,” “Governance of the Company - Director Independence,” and “Governance of the Company - Other Directorships, Conflicts and Related Party Transactions,” is incorporated herein by reference.

ITEM 14 PRINCIPAL ACCOUNTING FEES AND SERVICES

The information in the Johnson Controls Proxy Statement set forth under “Proposal Number Two” related to the appointment of auditors is incorporated herein by reference.

PART IV

ITEM 15 EXHIBITS, FINANCIAL STATEMENT SCHEDULES

(a) The following documents are filed as part of this Form 10-K:

Reference is made to the separate exhibit index contained on page 113 filed herewith.

All other schedules are omitted because they are not applicable, or the required information is shown in the financial statements or notes thereto.

Financial statements of 50% or less-owned companies have been omitted because the proportionate share of their revenue or profit before income taxes is individually less than 20% of the respective consolidated amounts and investments in such companies are less than 20% of consolidated total assets.

ITEM 16 FORM 10-K SUMMARY

Not applicable.

Johnson Controls International plc
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(a) (1) and (2) Financial Statements and Supplementary Data - See Item 8
(b) Exhibit Index:

Exhibit	Title
2.1	Separation and Distribution Agreement, dated as of September 8, 2016, by and between Johnson Controls International plc and Adient Limited (incorporated by reference to Exhibit 2.1 to the registrant's Current Report on Form 8-K filed September 9, 2016)
2.2	Agreement and Plan of Merger by and among Johnson Controls, Inc., Johnson Controls International plc (formerly Tyco International plc) and Jagara Merger Sub LLC, dated as of January 24, 2016 (incorporated by reference to Exhibit 2.1 to the registrant's Current Report on Form 8-K filed January 27, 2016)
2.3	Merger Agreement, dated as of May 30, 2014, between Tyco International Ltd., and Johnson Controls International plc (formerly Tyco International plc) (incorporated by reference to Exhibit 2.1 to the registrant's Current Report on Form 8-K filed on June 4, 2014)
3.1	Memorandum and Articles of Association of Johnson Controls International plc, as amended by special resolutions dated September 8, 2014, August 17, 2016 and March 7, 2018 (incorporated by reference to Exhibit 3.1 to the registrant's Quarterly Report on Form 10-Q filed on May 3, 2018)
4.1	Indenture, dated December 28, 2016, between Johnson Controls International plc and U.S. Bank National Association, as trustee (incorporated by reference to Exhibit 4.1 to the registrant's current report on Form 8-K filed on December 28, 2016)
4.2	First Supplemental Indenture, dated December 28, 2016, between Johnson Controls International plc, and U.S. Bank National Association, as trustee, and Elavon Financial Services DAC, UK Branch, as paying agent for the New Euro Notes attaching forms of 2.355% Senior Notes due 2017 (retired; no longer outstanding), 7.125% Senior Notes due 2017 (retired; no longer outstanding), 1.400% Senior Notes due 2017 (retired, no longer outstanding), 3.750% Notes due 2018 (retired; no longer outstanding), 5.000% Senior Notes due 2020 (retired; no longer outstanding), 4.25% Senior Notes due 2021 (retired; no longer outstanding), 3.750% Senior Notes due 2021 (retired; no longer outstanding), 3.625% Senior Notes due 2024, 6.000% Notes due 2036, 5.70% Senior Notes due 2041, 5.250% Senior Notes due 2041, 4.625% Senior Notes due 2044, 6.950% Debentures due December 1, 2045, 4.950% Senior Notes due 2064, 4.625% Notes due 2023, 1.375% Notes due 2025, 3.900% Notes due 2026, and 5.125% Notes due 2045 (incorporated by reference to Exhibit 4.2 to the registrant's current report on Form 8-K filed on December 28, 2016)
4.3	Second Supplemental Indenture, dated February 7, 2017, between Johnson Controls International plc and U.S. Bank National Association, as trustee, attaching form of 4.500% Senior Notes due 2047 (incorporated by reference to Exhibit 4.2 to the registrant's Current Report on Form 8-K filed on February 7, 2017)
4.4	Third Supplemental Indenture, dated March 15, 2017, among Johnson Controls International plc, U.S. Bank National Association, as trustee and Elavon Financial Services DAC, UK Branch, as paying agent, attaching form of 1.000% Senior Notes due 2023 (incorporated by reference to Exhibit 4.2 to the registrant's Current Report on Form 8-K filed on March 15, 2017)
4.5	Fifth Supplemental Indenture, dated September 11, 2020, among Johnson Controls International plc, Tyco Fire & Security Finance S.C.A. and U.S. Bank National Association, as trustee, attaching form of the 1.750% Senior Notes due 2030 (incorporated by reference to Exhibit 4.2 to the registrant's Current Report on Form 8-K filed on September 11, 2020)
4.6	Sixth Supplemental Indenture, dated September 15, 2020, among Johnson Controls International plc, Tyco Fire & Security Finance S.C.A., U.S. Bank National Association, as trustee, and Elavon Financial Services DAC, as paying agent, attaching forms of the 0.375% Senior Notes due 2027 and the 1.000% Senior Notes due 2032 (incorporated by reference to Exhibit 4.2 to the registrant's Current Report on Form 8-K filed on September 15, 2020)

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Exhibit	Title
4.7	Seventh Supplemental Indenture, dated September 16, 2021, among Johnson Controls International plc, Tyco Fire & Security Finance S.C.A. and U.S. Bank National Association, as trustee, attaching form of the 2.000% Sustainability-Linked Senior Notes due 2031 (incorporated by reference to Exhibit 4.2 to the registrant's Current Report on Form 8-K filed on September 16, 2021)
4.8	Eighth Supplemental Indenture, dated as of September 7, 2022, among Johnson Controls International plc, Tyco Fire & Security Finance S.C.A., U.S. Bank Trust Company, National Association, as trustee and Elavon Financial Services DAC, as paying agent attaching form of the 3.000% Senior Notes due 2028 (incorporated by reference to Exhibit 4.2 to the registrant's Current Report on Form 8-K filed on September 7, 2022)
4.9	Ninth Supplemental Indenture, dated as of September 14, 2022, among Johnson Controls International plc, Tyco Fire & Security Finance S.C.A. and U.S. Bank Trust Company, National Association, as trustee (attaching form of the 4.900% Senior Notes due 2032). (incorporated by reference to Exhibit 4.2 to the registrant's Current Report on Form 8-K filed on September 14, 2022)
4.10	Description of the Ordinary Shares of Johnson Controls International plc (filed herewith)
4.11	Description of the Johnson Controls International plc Notes (filed herewith)
4.12	Description of the Johnson Controls International plc and Tyco Fire & Security Finance S.C.A. Notes (filed herewith)
4.13	Miscellaneous long-term debt agreements and financing leases with banks and other creditors and debenture indentures.*
4.14	Miscellaneous industrial development bond long-term debt issues and related loan agreements and leases.*
10.1	Credit Agreement, dated as of December 5, 2019, among Johnson Controls International plc, certain of its subsidiaries party thereto from time to time, the lenders party thereto from time to time, and JPMorgan Chase Bank, N.A., as administrative agent (incorporated by reference to Exhibit 10.1 to the registrant's Current Report filed December 6, 2019)
10.2	Amendment to Credit Agreement, dated as of December 2, 2021, by and between Johnson Controls International plc, and JPMorgan Chase Bank, N.A., as administrative agent (incorporated by reference to Exhibit 10.1 to the registrant's Quarterly Report on Form 10-Q filed February 2, 2022)
10.3	Amendment to Credit Agreement, dated as of May 25, 2021, by and between Johnson Controls International plc, and JPMorgan Chase Bank, N.A., as administrative agent (incorporated by reference to Exhibit 10.2 to the registrant's Quarterly Report on Form 10-Q filed February 2, 2022)
10.4	Tax Matters Agreement, dated as of September 8, 2016, by and between Johnson Controls International plc and Adient Limited (incorporated by reference to Exhibit 10.2 to the registrant's Current Report on Form 8-K filed on September 9, 2016)
10.5	Employee Matters Agreement, dated as of September 8, 2016, by and between Johnson Controls International plc and Adient Limited (incorporated by reference to Exhibit 10.3 to the registrant's Current Report on Form 8-K filed on September 9, 2016)
10.6	Tax Sharing Agreement, dated September 28, 2012 by and among Pentair Ltd., Johnson Controls International plc (formerly Tyco International Ltd.), Tyco International Finance S.A. and The ADT Corporation (incorporated by reference to Exhibit 10.1 to the registrant's Current Report on Form 8-K filed on October 1, 2012) (Commission File No. 1-13836)

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Exhibit	Title
10.7	Non-Income Tax Sharing Agreement dated September 28, 2012 by and among Johnson Controls International plc (formerly Tyco International Ltd.), Tyco International Finance S.A. and The ADT Corporation (incorporated by reference to Exhibit 10.2 to the registrant's Current Report on Form 8-K filed on October 1, 2012) (Commission File No. 1-13836)
10.8	Trademark Agreement, dated as of September 25, 2012, by and among ADT Services GmbH, ADT US Holdings, Inc., Johnson Controls International plc (formerly Tyco International Ltd.) and The ADT Corporation (incorporated by reference to Exhibit 10.3 to the registrant's Current Report on Form 8-K filed on October 1, 2012) (Commission File No. 1-13836)
10.9	Form of Deed of Indemnification between Johnson Controls International plc (formerly Tyco International plc) and certain of its directors and officers (incorporated by reference to Exhibit 10.4 to the registrant's Current Report on Form 8-K filed on September 6, 2016)
10.10	Form of Indemnification Agreement between Tyco Fire & Security (US) Management, Inc. and certain directors and officers of Johnson Controls International plc (incorporated by reference to Exhibit 10.5 to the registrant's Current Report on Form 8-K filed on September 6, 2016)
10.11	Johnson Controls International plc 2012 Share and Incentive Plan, amended and restated as of March 8, 2017 (incorporated by reference to Exhibit 10.2 to the registrant's Quarterly Report on Form 10-Q filed on May 4, 2017)**
10.12	Johnson Controls International plc 2007 Stock Option Plan (incorporated by reference to Exhibit 10.7 to the registrant's Current Report on Form 8-K filed on September 6, 2016)**
10.13	Johnson Controls International plc 2012 Omnibus Incentive Plan (incorporated by reference to Exhibit 10.6 to the registrant's Current Report on Form 8-K filed on September 6, 2016)**
10.14	Johnson Controls International plc 2021 Equity and Incentive Plan (incorporated by reference to Annex B to the registrant's Definitive Proxy Statement on Schedule 14A filed on January 22, 2021) **
10.15	Johnson Controls International plc Severance and Change in Control Policy for Officers, amended and restated March 11, 2021 (Incorporated by reference to Exhibit 10.4 to the registrant's Quarterly Report on Form 10-Q filed on April 30, 2021)**
10.16	Johnson Controls International plc Executive Deferred Compensation Plan, as amended and restated March 11, 2021 (Incorporated by reference to Exhibit 10.5 to the registrant's Quarterly Report on Form 10-Q filed on April 30, 2021)**
10.17	Johnson Controls International plc Retirement Restoration Plan, as amended and restated March 11, 2021 (incorporated by reference to Exhibit 10.7 to the registrant's Quarterly Report on Form 10-Q filed on April 30, 2021)**
10.18	Tyco Supplemental Savings and Retirement Plan as amended and restated effective January 1, 2018 (incorporated by reference to Exhibit 10.2 to the registrant's Current Report on Form 8-K filed on September 19, 2017) **
10.19	Johnson Controls International plc Executive Compensation Incentive Recoupment Policy effective December 10, 2020 (incorporated by reference to Exhibit 10.3 to the registrant's Quarterly Report on Form 10-Q filed on January 29, 2021)**
10.20	Letter Agreement between Johnson Controls International plc and George R. Oliver dated December 8, 2017 (Incorporated by reference to Exhibit 10.1 to the registrant's Current Report on Form 8-K filed on December 11, 2017)**

Exhibit	Title
10.21	Form of terms and conditions for Option / SAR Awards, Restricted Stock / Unit Awards, Performance Share Awards under the Johnson Controls International plc 2012 Share and Incentive Plan for periods commencing December 6, 2018 (incorporated by reference to Exhibit 10.2 to the registrant's Quarterly Report on Form 10-Q filed February 1, 2019)**
10.22	Form of terms and conditions for Option / SAR Awards, and Restricted Stock / Unit Awards, under the Johnson Controls International plc 2012 Share and Incentive Plan commencing December 6, 2018 applicable to Mr. Stief (incorporated by reference to Exhibit 10.3 to the registrant's Quarterly Report on Form 10-Q filed February 1, 2019)**
10.23	Form of Option/SAR Award for Executive Officers (incorporated by reference to Exhibit 10.24 to the registrant's Annual Report on Form 10-K for the fiscal year ended September 30, 2019 filed on November 21, 2019)**
10.24	Form of terms and conditions for Option / SAR Awards, Restricted Stock / Unit Awards, Performance Share Awards under the Johnson Controls International plc 2012 Share and Incentive Plan for fiscal 2018 (incorporated by reference to Exhibit 10.3 to the registrant's Quarterly Report on Form 10-Q filed on February 2, 2018)**
10.25	Form of terms and conditions for Option / SAR Awards, and Restricted Stock / Unit Awards, under the Johnson Controls International plc 2012 Share and Incentive Plan for fiscal 2018 applicable to Messrs. Oliver and Stief (incorporated by reference to Exhibit 10.4 to the registrant's Quarterly Report on Form 10-Q filed on February 2, 2018)**
10.26	Form of terms and conditions for Option / SAR Awards, Restricted Stock / Unit Awards, Performance Share Awards under the Johnson Controls International plc 2012 Share and Incentive Plan for periods commencing on September 2, 2016 (incorporated by reference to Exhibit 10.33 to the registrant's Annual Report on Form 10-K for the fiscal year ended September 30, 2016 filed on November 23, 2016)**
10.28	Form of terms and conditions for Option / SAR Awards, and Restricted Stock / Unit Awards, under the Johnson Controls International plc 2012 Share and Incentive Plan for periods commencing on September 2, 2016 applicable to Messrs. Molinaroli, Oliver and Stief (incorporated by reference to Exhibit 10.1 to registrant's Quarterly Report on Form 10-Q filed on February 8, 2017)**
10.28	Form of terms and conditions for Option Awards, Restricted Unit Awards, Performance Share Awards under the 2012 Share and Incentive Plan for fiscal 2016 (incorporated by reference to Exhibit 10.2 to the registrant's Current Report on Form 8-K filed on October 13, 2015)**
10.29	Form of terms and conditions for Option Awards, Restricted Unit Awards, Performance Share Awards under the 2012 Stock and Incentive Plan for fiscal 2015 (incorporated by reference to Exhibit 10.9 to the registrant's Annual Report on Form 10-K for the fiscal year ended September 26, 2014 filed on November 14, 2014) (Commission File No. 1-13836)**
10.30	Form of terms and conditions for Option Awards, Restricted Unit Awards, Performance Share Awards under the 2012 Stock and Incentive Plan for fiscal 2014 (incorporated by reference to Exhibit 10.9 to the registrant's Annual Report on Form 10-K filed on for the year ended September 27, 2013 filed on November 14, 2013) (Commission File No. 1-13836)**
10.31	Johnson Controls, Inc. 2012 Omnibus Incentive Plan (incorporated by reference to Exhibit 10.1(a) to Johnson Controls, Inc.'s Current Report on Form 8-K filed January 28, 2013) (Commission File No. 1-5097)**
10.32	Form of option/stock appreciation right agreement for Johnson Controls, Inc. 2012 Omnibus Incentive Plan (incorporated by reference to Exhibit 10.1(c) to Johnson Controls, Inc.'s Current Report on Form 8-K filed November 21, 2013) (Commission File No. 1-5097)**

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Exhibit	Title
10.33	Restrictive covenants applicable to equity award agreements beginning December 2019 (incorporated by reference to Exhibit 10.3 to the registrant's Quarterly Report on Form 10-Q filed on January 31, 2020)**
10.34	Form of terms and conditions for Option / SAR Awards, Restricted Stock / Unit Awards, Performance Share Awards under the Johnson Controls International plc 2012 Share and Incentive Plan for fiscal 2021 (incorporated by reference to Exhibit 10.1 to the registrant's Quarterly Report on Form 10-Q filed on January 29, 2021)**
10.35	Form of terms and conditions for Option / SAR Awards, Restricted Stock / Unit Awards, Performance Share Awards under the Johnson Controls International plc 2021 Equity and Incentive Plan (incorporated by reference to Exhibit 10.2 to the registrant's Quarterly Report on Form 10-Q filed on April 30, 2021)**
10.36	Form of terms and conditions for Restricted Stock Units for Directors under the Johnson Controls International plc 2021 Equity and Incentive Plan (incorporated by reference to Exhibit 10.3 to the registrant's Quarterly Report on Form 10-Q filed on April 30, 2021)**
10.37	Form of terms and conditions for Restricted Stock / Unit Awards under the Johnson Controls International plc 2021 Equity and Incentive Plan applicable to Ms. Schlitz (filed herewith)**
21.1	Subsidiaries of Johnson Controls International plc (filed herewith)
22.1	Co-Issuer of Debt Securities (filed herewith)
23.1	Consent of Independent Public Accounting Firm (filed herewith)
31.1	Certification by the Chief Executive Officer pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 (filed herewith)
31.2	Certification by the Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 (filed herewith)
32.1	Certification by the Chief Executive Officer and Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (filed herewith)
101	Financial statements from the Annual Report on Form 10-K of Johnson Controls International plc for the fiscal year ended September 30, 2022 formatted in iXBRL (Inline Extensible Business Reporting Language): (i) the Consolidated Statements of Financial Position, (ii) the Consolidated Statements of Income, (iii) the Consolidated Statements of Comprehensive Income, (iv) the Consolidated Statements of Cash Flow, (v) the Consolidated Statements of Shareholders' Equity and (vi) Notes to Consolidated Financial Statements (filed herewith)
*	These instruments are not being filed as exhibits herewith because none of the long-term debt instruments authorizes the issuance of debt in excess of 10% of the total assets of Johnson Controls International plc and its subsidiaries on a consolidated basis. Johnson Controls International plc agrees to furnish a copy of each agreement to the Securities and Exchange Commission upon request.
**	Management contract or compensatory plan.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

JOHNSON CONTROLS INTERNATIONAL PLC

By /s/ Olivier Leonetti
Olivier Leonetti
Executive Vice President and
Chief Financial Officer

Date: November 15, 2022

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below as of November 15, 2022, by the following persons on behalf of the registrant and in the capacities indicated:

/s/ George R. Oliver
George R. Oliver
Chairman and Chief Executive Officer
(Principal Executive Officer)

/s/ Olivier Leonetti
Olivier Leonetti
Executive Vice President and
Chief Financial Officer (Principal Financial Officer)

/s/ Daniel C. McConeghy
Daniel C. McConeghy
Vice President and Chief Accounting and Tax Officer
(Principal Accounting Officer)

/s/ Jean Blackwell
Jean Blackwell
Director

/s/ Pierre Cohade
Pierre Cohade
Director

/s/ Michael E. Daniels
Michael E. Daniels
Director

/s/ W. Roy Dunbar
W. Roy Dunbar
Director

/s/ Gretchen R. Haggerty
Gretchen R. Haggerty
Director

/s/ Simone Menne
Simone Menne
Director

/s/ Jürgen Tinggren
Jürgen Tinggren
Director

/s/ Mark P. Vergnano
Mark P. Vergnano
Director

/s/ R. David Yost
R. David Yost
Director

/s/ John D. Young
John D. Young
Director

Exhibit 4.10

DESCRIPTION OF ORDINARY SHARES

The following description of the material terms of our ordinary shares is based on the provisions of our Irish memorandum and articles of association. This description is not complete and is subject to the applicable provisions of Irish law and our memorandum and articles of association, which are incorporated by reference as exhibits to this Annual Report on Form 10-K. The transfer agent and registrar for our ordinary shares is Equiniti Trust Company. Our ordinary shares are listed on the New York Stock Exchange under the ticker symbol “JCI.”

Capital Structure

Authorized and Issued Share Capital

Our authorized share capital is $22,000,000 and €40,000, divided into 2,000,000,000 ordinary shares with a par value of $0.01 per share, 200,000,000 preferred shares with a par value of $0.01 per share, and 40,000 ordinary A shares with a par value of €1.00 per share. The authorized share capital includes 40,000 ordinary A shares with a par value of €1.00 per share in order, at the time of its incorporation, to satisfy statutory requirements for the incorporation of all Irish public limited companies. We may issue shares subject to the maximum amount prescribed by our authorized share capital contained in our memorandum and articles of association.

As a matter of Irish company law, the directors of a company may issue new ordinary or preferred shares (including the grant of options and issue of warrants) without shareholder approval once authorized to do so by the memorandum and articles of association of the company or by an ordinary resolution adopted by the shareholders at a general meeting. An ordinary resolution requires over 50% of the votes cast by a company’s shareholders at a general meeting. The authority conferred can be granted for a maximum period of five years, at which point it will lapse unless renewed by the shareholders of the company by an ordinary resolution. The board of directors is authorized, under an annual authorization by shareholders pursuant to an ordinary resolution, to issue ordinary shares subject to a maximum of approximately 33% of our issued share capital. The current annual authorization will expire at the earlier of the date of our annual general meeting in 2023 or September 9, 2023 unless renewed (a renewal of the authorization will be proposed at our annual general meeting in 2023, which if approved would expire on the date of our annual general meeting in 2024 or 18 months after the date of our 2023 annual general meeting (whichever is earlier)).

Notwithstanding this authority, under the Irish Takeover Rules the board of directors would not be permitted to issue any shares, during a period when an offer has been made for us or is believed to be imminent unless the issue is (i) approved by shareholders at a general meeting, (ii) consented to by the Irish Takeover Panel on the basis it would not constitute action frustrating the offer, (iii) consented to by the Irish Takeover Panel and approved by the holders of more than 50% of our voting rights, (iv) consented to by the Irish Takeover Panel in circumstances where a contract for the issue of the shares had been entered into prior to that period, or (v) consented to by the Irish Takeover Panel in circumstances where the issue of the shares was decided by our board of directors prior to that period and either action has been taken to implement the issuance (whether in part or in full) prior to such period or the issuance was otherwise in the ordinary course of business.

The board of directors has previously represented that it will not, without prior shareholder approval, approve the issuance or use of any of the preferred shares for any defensive or anti-takeover purpose or for the purpose of implementing any shareholder rights plan. Within these limits, the board of directors may approve the issuance or use of preferred shares for capital raising, financing or acquisition needs or opportunities that has the effect of making a takeover of us or other acquisition transaction more difficult or costly, as could also be the case if the board of directors were to issue additional ordinary shares.

The authority to issue preferred shares provides us with the flexibility to consider and respond to future business needs and opportunities as they arise from time to time, including in connection with capital raising, financing, and acquisition transactions or opportunities.

The authorized but unissued share capital may be increased or reduced by way of an ordinary resolution of our shareholders. The shares comprising our authorized share capital may be divided into shares of such par value as the resolution shall prescribe. The rights and restrictions to which the ordinary shares will be subject are prescribed in our memorandum and articles of association.

Irish law does not recognize fractional shares held of record; accordingly, our memorandum and articles of association do not provide for the issuance of fractional shares, and our official Irish register will not reflect any fractional shares.

Dividends

Under Irish law, dividends and distributions may only be made from distributable reserves. Distributable reserves, broadly, means our accumulated realized profits less our accumulated realized losses. In addition, no distribution or dividend may be made unless our net assets are equal to, or in excess of, the aggregate of our called up share capital plus undistributable reserves and the distribution does not reduce our net assets below such aggregate. Undistributable reserves include the share premium account, the par value of shares acquired by us and the amount by which our accumulated unrealized profits, so far as not previously utilized by any capitalization, exceed our accumulated unrealized losses, so far as not previously written off in a reduction or reorganization of capital.

The determination as to whether or not we have sufficient distributable reserves to fund a dividend must be made by reference to our "relevant financial statements." The "relevant financial statements" will be either the last set of unconsolidated annual audited financial statements or unaudited financial statements prior to the declaration of a dividend prepared in accordance with the Irish Companies Act, which give a "true and fair view" of our unconsolidated financial position and accord with accepted accounting practice. The relevant financial statements must be filed in the Companies Registration Office (the official public registry for companies in Ireland).

The mechanism as to who declares a dividend and when a dividend shall become payable is governed by our articles of association, which authorize the directors to declare such dividends as appear justified from our profits without the approval of the shareholders at a general meeting. The board of directors may also recommend a dividend to be approved and declared by the shareholders at a general meeting. Although the shareholders may direct that the payment be made by distribution of assets, shares or cash, no dividend issued may exceed the amount recommended by the directors. The dividends can be declared and paid in the form of cash or non-cash assets.

Our directors may deduct from any dividend payable to any shareholder all sums of money (if any) payable by him or her to us in relation to our shares. Our directors are also entitled to issue shares with preferred rights to participate in dividends we declare. The holders of such preferred shares may, depending on their terms, be entitled to claim arrears of a declared dividend out of subsequently declared dividends in priority to ordinary shareholders.

Preemptive Rights and Advance Subscription Rights

Certain statutory preemption rights apply automatically in favor of our shareholders where our shares are to be issued for cash (including pursuant to non-compensatory options). Statutory preemption rights do not apply (i) where shares are issued for non-cash consideration (such as in a stock-for-stock acquisition), (ii) to the issue of non-equity shares (that is, shares that have the right to participate only up to a specified amount in any income or capital distribution) or (iii) where shares are issued pursuant to an employee option or similar equity plan. In addition, and without prejudice to any existing authorities granted to the board of directors, the board of directors is authorized, under an annual authorization by shareholders pursuant to a special resolution, to issue ordinary shares without the application of preemption rights of up to approximately 5% of our issued share capital. The current annual authorization will expire at the earlier of the date of our annual general meeting in 2023 or September 9, 2023 unless renewed (a renewal of the authorization will be proposed at our annual general meeting in 2023, which if approved would expire on the date of our annual general meeting in 2024 or 18 months after the date of our 2023 annual general meeting (whichever is earlier)).

A special resolution requires not less than 75% of the votes cast by our shareholders at a general meeting. If the opt-out is not renewed, shares issued for cash must be offered to our pre-existing shareholders pro rata to their existing shareholding in accordance with the statutory preemption rights described above before the shares can be issued to any new shareholders.

Issuance of Warrants and Options

Our articles of association provide that, subject to any shareholder approval requirement under any laws, regulations or the rules of any stock exchange to which we are subject, the board is authorized, from time to time, in its discretion, to grant such persons, for such periods and upon such terms as the board deems advisable, options to purchase such number of shares of any class or classes or of any series of any class as the board may deem advisable, and to cause warrants or other appropriate instruments evidencing such options to be issued. The issuance of warrants or options is subject to the same requirements for shareholder authority and statutory preemption rights as applies to the issue of ordinary shares described under the headings "*–Capital Structure– Authorized and Issued Share Capital*" and "*–Preemptive Rights and Advance Subscription Rights*" in this summary and the number of shares capable of being issued under options and warrants are aggregated with the number of shares issued under those authorizations for determining the utilization of those authorizations. The board may issue shares upon exercise of warrants or options without shareholder approval or authorization provided that the original warrants or options were issued when valid authorization was in place.

Share Repurchases and Redemptions

Overview

Article 3 of our articles of association provides that any ordinary share which we have acquired or agreed to acquire shall be deemed to be a redeemable share. Accordingly, for Irish company law purposes, the repurchase of ordinary shares by us will technically be effected as a redemption of those shares as described below. If our articles of association did not contain Article 3(d), repurchases of our ordinary shares would be subject to many of the same rules that apply to purchases of our ordinary shares by subsidiaries described below, including the shareholder approval requirements described below and the requirement that any on-market purchases be effected on a "recognized stock exchange." Except where otherwise noted, when we refer to repurchasing or buying back our ordinary shares, we are referring to the redemption of ordinary shares by us pursuant to Article 3(d) of the articles of association or the purchase of our ordinary shares by a subsidiary of ours, in each case in accordance with our articles of association and Irish company law as described below.

Repurchases and Redemptions by Us

Under Irish law, a company can issue redeemable shares and redeem them out of distributable reserves or the proceeds of a new issue of shares for that purpose. The issue of redeemable shares may only be made by us where the nominal value of the issued share capital that is not redeemable is not less than 10% of the aggregate of the par value and share premium in respect of the allotment of our shares together with the par value of any shares acquired by us. All redeemable shares must also be fully paid and the terms of redemption of the shares must provide for payment on redemption. Redeemable shares may, upon redemption, be cancelled or held in treasury. Shareholder approval will not be required to redeem our ordinary shares. Our board of directors will also be entitled to issue preferred shares which may be redeemed at either our option or the that of the shareholder, depending on the terms of such preferred shares.

Repurchased and redeemed shares may be cancelled or held as treasury shares. The nominal value of treasury shares held by us at any time must not exceed 10% of our company capital (consisting of the aggregate of the par value and share premium in respect of the allotment of our shares together with the par value of any shares acquired by us). While we hold shares as treasury shares, we cannot exercise any voting rights in respect of those shares. We may cancel or reissue treasury shares subject to certain conditions.

Purchases by Our Subsidiaries

Under Irish law, it may be permissible for an Irish or non-Irish subsidiary to purchase our shares either on-market or off-market. A general authority of our shareholders is required to allow a subsidiary of ours to make on-market purchases of our ordinary shares; however, as long as this general authority has been granted, no specific shareholder authority for a particular on-market purchase by a subsidiary of our ordinary shares is required. Such an authority has been adopted by our shareholders. We have sought such general authority, which must expire no later than 18 months after the date on which it was granted, at previous annual general meetings and expect to seek to renew such authority at subsequent annual general meetings. In order for a subsidiary of ours to make an on-market purchase of our shares, such shares must be purchased on a "recognized stock exchange." The New York Stock Exchange, on which our shares are listed, is a recognized stock exchange for this purpose under Irish company law. For an off-market purchase by a subsidiary of ours, the proposed purchase contract must be authorized by special resolution of our shareholders before the contract is entered into. The person whose shares are to be bought back cannot vote in favor of the special resolution and, from the date of the notice of the meeting at which the resolution approving the contract is to be proposed, the purchase contract must be on display or must be available for inspection by shareholders at our registered office.

The number of shares held by our subsidiaries at any time will count as treasury shares and will be included in any calculation of the permitted treasury share threshold of 10% of the aggregate of the par value and share premium in respect of the allotment of our shares together with the par value of any shares acquired by us. While a subsidiary holds our shares, it cannot exercise any voting rights in respect of those shares. The acquisition of our shares by a subsidiary must be funded out of distributable reserves of the subsidiary.

Lien on Shares, Calls on Shares and Forfeiture of Shares

Our articles of association provide that we will have a first and paramount lien on every share for all moneys payable, whether presently due or not, in respect of such share. Subject to the terms of their allotment, directors may call for any unpaid amounts in respect of any shares to be paid, and if payment is not made, the shares may be forfeited. These provisions are standard inclusions in the articles of association of an Irish company limited by shares, such as us.

Bonus Shares

Under our articles of association, the board of directors may resolve to capitalize any amount credited to any reserve or fund available for distribution or the share premium account or other undistributable reserve of ours for issuance and distribution to shareholders as fully paid up bonus shares on the same basis of entitlement as would apply in respect of a dividend distribution.

Consolidation and Division; Subdivision

Under our articles of association, we may by ordinary resolution consolidate and divide all or any of our share capital into shares of larger par value than its existing shares or subdivide our shares into smaller amounts than is fixed by our articles of association.

Reduction of Share Capital

We may, by ordinary resolution, reduce our authorized but unissued share capital in any way and reduce the nominal value of any of its shares. We also may, by special resolution and subject to confirmation by the Irish High Court (or as otherwise permitted under the Irish Companies Act), reduce or cancel our issued share capital in any way.

General Meetings of Shareholders

We are generally required to hold an annual general meeting at intervals of no more than fifteen months, provided that an annual general meeting is held in each calendar year, no more than nine months after our fiscal year-end.

Our articles of association provide that shareholder meetings may be held outside of Ireland (subject to compliance with the Irish Companies Act). Where a company holds its annual general meeting or extraordinary general meeting outside of Ireland, the Irish Companies Act requires that the company, at its own expense, make all necessary arrangements to ensure that members can by technological means participate in the meeting without leaving Ireland (unless all of the members entitled to attend and vote at the meeting consent in writing to the meeting being held outside of Ireland).

Extraordinary general meetings may be convened by (i) the board of directors, (ii) on requisition of the shareholders holding not less than 10% of the paid up share capital of our shares carrying voting rights or (iii) on requisition of our auditors. Extraordinary general meetings are generally held for the purposes of approving shareholder resolutions as may be required from time to time.

Notice of a general meeting must be given to all of our shareholders and to our auditors. Our articles of association provide that the maximum notice period is 60 days. The minimum notice periods are 21 days' notice in writing for an annual general meeting or an extraordinary general meeting to approve a special resolution and 14 days' notice in writing for any other extraordinary general meeting. In each case the notice period excludes the date of mailing, the date of the meeting and is in addition to two days for deemed delivery where this is by electronic means. General meetings may be called by shorter notice, but only with the consent of our auditors and all of the shareholders entitled to attend and vote thereat. Because of the 21-day and 14-day requirements described in this paragraph, our articles of association include provisions reflecting these requirements of Irish law.

In the case of an extraordinary general meeting convened by our shareholders, the proposed purpose of the meeting must be set out in the requisition notice. The requisition notice can contain any resolution. Upon receipt of this requisition notice, the board of directors has 21 days to convene a meeting of our shareholders to vote on the matters set out in the requisition notice. This meeting must be held within two months of the receipt of the requisition notice. If the board of directors does not convene the meeting within such 21-day period, the requisitioning shareholders, or any of them representing more than one half of the total voting rights of all of them, may themselves convene a meeting, which meeting must be held within three months of the receipt of the requisition notice.

The only matters which must, as a matter of Irish company law, be transacted at an annual general meeting are the presentation of the annual accounts, balance sheet and reports of the directors and auditors, the appointment of auditors and the fixing of the auditor's remuneration (or delegation of same). If no resolution is made in respect of the reappointment of an auditor at an annual general meeting, the previous auditor will be deemed to have continued in office. Directors are elected by the affirmative vote of a majority of the votes cast by shareholders at an annual general meeting and, pursuant to our articles of association, serve for one-year terms. Any nominee for director who does not receive a majority of the votes cast is not elected to the board. However, because Irish law requires a minimum of two directors at all times, in the event that an election results in no directors being elected, each of the two nominees receiving the greatest number of votes in favor of his or her election shall hold office until his or her successor shall be elected. In the event that an election results in only one director being elected, that director shall be elected and shall serve for a one-year term, and the nominee receiving the greatest number of votes in favor of their election shall hold office until his or her successor shall be elected.

If the directors become aware that our net assets are half or less of the amount of our called-up share capital, the directors must convene an extraordinary general meeting of our shareholders not later than 28 days from the date that they learn of this fact. This meeting must be convened for the purposes of considering whether any, and if so what, measures should be taken to address the situation.

Voting

General

Where a poll is demanded at a general meeting, every shareholder shall have one vote for each ordinary share that he or she holds as of the record date for the meeting. Voting rights on a poll may be exercised by shareholders registered in our share register as of the record date for the meeting or by a duly appointed proxy of such a registered shareholder, which proxy need not be a shareholder. Where interests in shares are held by a nominee trust company this company may exercise the rights of the beneficial holders on their behalf as their proxy. All proxies must be appointed in the manner prescribed by the Irish Companies Act. Our articles of association permit the appointment of proxies by the shareholders to be notified by us electronically, when permitted by the directors.

Our articles of association provide that all resolutions shall be decided by a show of hands unless a poll is demanded by the chairman, by at least three shareholders as of the record date for the meeting or by any shareholder or shareholders holding not less than 10% of the total voting rights of ours as of the record date for the meeting. Each of our shareholders of record as of the record date for the meeting has one vote at a general meeting on a show of hands.

In accordance with our articles of association, our directors may from time to time cause us to issue preferred shares. These preferred shares may have such voting rights as may be specified in the terms of such preferred shares (e.g., they may carry more votes per share than ordinary shares or may entitle their holders to a class vote on such matters as may be specified in the terms of the preferred shares).

Treasury shares will not be entitled to vote at general meetings of shareholders

Supermajority Voting

Irish company law requires "special resolutions" of the shareholders at a general meeting to approve certain matters. A special resolution requires not less than 75% of the votes cast by our shareholders at a general meeting. This may be contrasted with "ordinary resolutions," which require a simple majority of the votes cast by our shareholders at a general meeting. Examples of matters requiring special resolutions include:

- amending our objects;
- amending our memorandum and articles of association;
- approving the change of our name;
- authorizing the entering into of a guarantee or provision of security in connection with a loan, quasi-loan or credit transaction to a director or connected person;
- opting out of pre-emption rights on the issuance of new shares;
- re-registration from a public limited company as a private company;
- variation of class rights attached to classes of shares;
- purchase of own shares off-market;
- the reduction of share capital;
- resolving that we be wound up by the Irish courts;
- resolving in favor of a shareholders' voluntary winding-up;
- re-designation of shares into different share classes; and
- setting the re-issue price of treasury shares.

A scheme of arrangement with shareholders requires a court order from the Irish High Court and the approval of (1) 75% of the voting shareholders by value and (2) 50% in number of the voting shareholders, at a meeting called to approve the scheme.

Variation of Class Rights Attaching to Shares

Variation of all or any special rights attached to any class of our shares is addressed in our articles of association as well as the Irish Companies Act. Any variation of class rights attaching to our issued shares must be approved by a special resolution of the shareholders of the class affected.

Quorum for General Meetings

The presence, in person or by proxy, of the holders of our ordinary shares outstanding which entitle the holders to a majority of the voting power of shares outstanding constitutes a quorum for the conduct of business. No business may take place at a general meeting if a quorum is not present in person or by proxy. The board of directors has no authority to waive quorum requirements stipulated in our articles of association. Abstentions and broker non-votes will be counted as present for purposes of determining whether there is a quorum in respect of the proposals.

Inspection of Books and Records

Under Irish law, shareholders have the right to: (1) receive a copy of our memorandum and articles of association and any act of the Irish Government which alters our memorandum of association; (2) inspect and obtain copies of our minutes of general meetings and resolutions; (3) inspect and receive a copy of the register of shareholders, register of directors and secretaries, register of directors' interests and other statutory registers maintained by us; (4) receive copies of financial statements and directors' and auditors' reports which have previously been sent to shareholders prior to an annual general meeting; and (5) receive financial statements of a subsidiary company of ours which have previously been sent to shareholders prior to an annual general meeting for the preceding ten years. Our auditors will also have the right to inspect all of our books, records and vouchers. The auditors' report must be circulated to the shareholders with our audited financial statements 21 days before the annual general meeting and must be laid before the shareholders at our annual general meeting.

Acquisitions and Appraisal Rights

There are a number of mechanisms for acquiring an Irish public limited company, including:

- a court-approved scheme of arrangement under the Irish Companies Act. A scheme of arrangement with shareholders requires a court order from the Irish High Court and the approval of: (1) 75% of the voting shareholders by value; and (2) greater than 50% in number of the voting shareholders, at a meeting called to approve the scheme;
- through a tender offer by a third party for all of our shares. Where the holders of 80% or more of our shares have accepted an offer for their shares, the remaining shareholders may be statutorily required to also transfer their shares. If the bidder does not exercise its "squeeze out" right, then the non-accepting shareholders also have a statutory right to require the bidder to acquire their shares on the same terms. If our shares were listed on Euronext Dublin or another regulated stock exchange in the European Union, this threshold would be increased to 90%; and
- by way of a merger with an EEA-incorporated company under the E.U. Cross Border Merger Directive (Directive 2017/1132/EU of the European Parliament and of the Council on cross-border mergers of limited liability companies). Such a merger must be approved by a special resolution (there is no statutory merger regime pursuant to Irish law for mergers between an Irish company and a company based outside of the European Economic Area, but Irish law nevertheless allows for the transfer of all assets and liabilities in accordance with an agreement such as the merger agreement).

Under Irish law, there is no requirement for a company's shareholders to approve a sale, lease or exchange of all or substantially all of a company's property and assets. However, our articles of association provide that the affirmative vote of the holders of a majority of the outstanding voting shares on the relevant record date is required to approve a sale, lease or exchange of all or substantially all of its property or assets.

Disclosure of Interests in Shares

Under the Irish Companies Act, there is a notification requirement for shareholders who acquire or cease to be interested in 3% of the shares of an Irish public limited company. A shareholder of ours must therefore make such a notification to us if as a result of a transaction the shareholder will be interested in 3% or more of our shares; or if as a result of a transaction a shareholder who was interested in more than 3% of our shares ceases to be so interested. Where a shareholder is interested in more than 3% of our shares, any alteration of his or her interest that brings his or her total holding through the nearest whole percentage number, whether an increase or a reduction, must be notified to us. The relevant percentage figure is calculated by reference to the aggregate par value of the shares in which the shareholder is interested as a proportion of the entire par value of our share capital. Where the percentage level of the shareholder's interest does not amount to a whole percentage this figure may be rounded down to the next whole number. All such disclosures should be notified to us within 5 business days of the transaction or alteration of the shareholder's interests that gave rise to the requirement to notify. Where a person fails to comply with the notification requirements described above no right or interest of any kind whatsoever in respect of any of our shares concerned, held by such person, shall be enforceable by such person, whether directly or indirectly, by action or legal proceeding. However, such person may apply to the court to have the rights attaching to the shares concerned reinstated.

In addition to the above disclosure requirement, under the Irish Companies Act we may by notice in writing require a person whom we know or have reasonable cause to believe to be, or at any time during the three years immediately preceding the date on which such notice is issued, to have been interested in shares comprised in our relevant share capital to: (a) indicate whether or not it is the case, and (b) where such person holds or has during that time held an interest in our shares, to give such further information as may be required by us including particulars of such person's own past or present interests in our shares. Any information given in response to the notice is required to be given in writing within such reasonable time as may be specified in the notice.

Where such a notice is served by us on a person who is or was interested in our shares and that person fails to give us any information required within the reasonable time specified, we may apply to court for an order directing that the affected shares be subject to certain restrictions.

Under the Irish Companies Act, the restrictions that may be placed on the shares by the court are as follows:

- any transfer of those shares, or in the case of unissued shares any transfer of the right to be issued with shares and any issue of shares, shall be void;
- no voting rights shall be exercisable in respect of those shares;
- no further shares shall be issued in right of those shares or in pursuance of any offer made to the holder of those shares; and
- no payment shall be made of any sums due from us on those shares, whether in respect of capital or otherwise.

Where our shares are subject to these restrictions, the court may order the shares to be sold and may also direct that the shares shall cease to be subject to these restrictions. Failure to comply with such a court order is a criminal offence.

Anti-Takeover Provisions

Business Combinations with Interested Shareholders

Our articles of association include a provision similar to Section 203 of the Delaware General Corporation Law, which generally prohibits us from engaging in a business combination with an interested shareholder for a period of three years following the date the person became an interested shareholder, unless, in general:

- our board of directors approved the transaction which resulted in the shareholder becoming an interested shareholder;
- upon consummation of the transaction which resulted in the shareholder becoming an interested shareholder, the shareholder owned at least 85% of the voting shares outstanding at the time of commencement of such transaction, excluding for purposes of determining the number of voting shares outstanding (but not the outstanding voting shares owned by the interested shareholder), voting shares owned by persons who are directors and also officers and by certain employee share plans; or

- the business combination is approved by our board of directors and authorized at an annual or extraordinary general meeting of shareholders by a special resolution, excluding for this purpose any votes cast by the interested shareholder.

A "business combination" is generally defined as a merger, asset or stock sale or other transaction resulting in a financial benefit to the interested shareholder. An "interested shareholder" is generally defined as a person who, together with affiliates and associates, owns or, within three years prior to the date in question, owned 15% or more of our outstanding voting shares.

Shareholder Rights Plans and Share Issuances

Irish law does not expressly prohibit companies from issuing share purchase rights or adopting a shareholder rights plan as an anti-takeover measure. However, there is no directly relevant case law on the validity of such plans under Irish law, and shareholder approval may be required under Irish law to implement such a plan. In addition, such a plan would be subject to the Irish Takeover Rules described below.

Subject to the Irish Takeover Rules described below, the board also has power to issue any of our authorized and unissued shares on such terms and conditions as it may determine and any such action should be taken in our best interests. It is possible, however, that the terms and conditions of any issue of preferred shares could discourage a takeover or other transaction that holders of some or a majority of the ordinary shares believe to be in their best interests or in which holders might receive a premium for their shares over the then market price of the shares. The board of directors represents that, it will not, without prior shareholder approval, approve the issuance or use of any of the preferred shares for any defensive or anti-takeover purpose or for the purpose of implementing any shareholder rights plan. Within these limits, the board of directors may approve the issuance or use of preferred shares for capital raising, financing or acquisition needs or opportunities that has the effect of making a takeover of us or other acquisition transactions more difficult or costly, as could also be the case if the board of directors were to issue additional ordinary shares.

Irish Takeover Rules and Substantial Acquisition Rules

A transaction by virtue of which a third party is seeking to acquire 30% or more of the voting rights of our shares will be governed by the Irish Takeover Panel Act 1997 and the Irish Takeover Rules made thereunder and will be regulated by the Irish Takeover Panel. The "General Principles" of the Irish Takeover Rules and certain important aspects of the Irish Takeover Rules are described below.

General Principles

The Irish Takeover Rules are built on the following General Principles which will apply to any transaction regulated by the Irish Takeover Panel:

- in the event of an offer, all classes of shareholders of the target company should be afforded equivalent treatment and, if a person acquires control of a company, the other holders of securities must be protected;
- the holders of securities in the target company must have sufficient time to allow them to make an informed decision regarding the offer;
- the board of a company must act in the interests of the company as a whole. If the board of the target company advises the holders of securities as regards the offer it must advise on the effects of the implementation of the offer on employment, employment conditions and the locations of the target company's place of business;
- false markets in the securities of the target company or any other company concerned by the offer must not be created;
- a bidder can only announce an offer after ensuring that he or she can fulfill in full the consideration offered;

- a target company may not be hindered longer than is reasonable by an offer for its securities. This is a recognition that an offer will disrupt the day-to-day running of a target company particularly if the offer is hostile and the board of the target company must divert its attention to resist the offer; and
- a "substantial acquisition" of securities (whether such acquisition is to be effected by one transaction or a series of transactions) will only be allowed to take place at an acceptable speed and shall be subject to adequate and timely disclosure.

Mandatory Bid

Under certain circumstances, a person who acquires our shares or other voting rights may be required under the Irish Takeover Rules to make a mandatory cash offer for our remaining outstanding shares at a price not less than the highest price paid for the shares by the acquirer (or any parties acting in concert with the acquirer) during the previous 12 months. This mandatory bid requirement is triggered if, unless the Panel otherwise consents, an acquisition of shares would (i) increase the aggregate holding of an acquirer (including the holdings of any parties acting in concert with the acquirer) to shares representing 30% or more of the voting rights in us, or (ii) in the case of a person holding (together with its concert parties) shares representing 30% or more of the voting rights in us, after giving effect to the acquisition, increase the percentage of the voting rights held by that person (together with its concert parties) by 0.05% within a 12-month period. Any person (excluding any parties acting in concert with the holder) holding shares representing more than 50% of the voting rights of a company is not subject to these mandatory offer requirements in purchasing additional securities.

Voluntary Bid; Requirements to Make a Cash Offer and Minimum Price Requirements

A voluntary offer is an offer that is not a mandatory offer. If a bidder or any of its concert parties acquire our ordinary shares within the period of three months prior to the commencement of the offer period, the offer price must be not less than the highest price paid for our ordinary shares by the bidder or its concert parties during that period. The Irish Takeover Panel has the power to extend the "look back" period to 12 months if the Irish Takeover Panel, having regard to the General Principles, believes it is appropriate to do so.

If the bidder or any of its concert parties has acquired our ordinary shares (i) during the period of 12 months prior to the commencement of the offer period which represent more than 10% of our total ordinary shares or (ii) at any time after the commencement of the offer period, the offer shall be in cash (or accompanied by a full cash alternative) and the price per ordinary share shall be not less than the highest price paid by the bidder or its concert parties during, in the case of (i), the period of 12 months prior to the commencement of the offer period and, in the case of (ii), the offer period. The Irish Takeover Panel may apply this rule to a bidder who, together with its concert parties, has acquired less than 10% of our total ordinary shares in the 12-month period prior to the commencement of the offer period if the Panel, having regard to the General Principles, considers it just and proper to do so.

An offer period will generally commence from the date of the first announcement of the offer or proposed offer.

Substantial Acquisition Rules

The Irish Takeover Rules also contain rules governing substantial acquisitions of shares which restrict the speed at which a person may increase his or her holding of shares and rights over shares to an aggregate of between 15% and 30% of the voting rights of our shares. Except in certain circumstances, an acquisition or series of acquisitions of shares or rights over shares representing 10% or more of the voting rights of our shares is prohibited, if such acquisition(s), when aggregated with shares or rights already held, would result in the acquirer holding 15% or more but less than 30% of the voting rights of our shares and such acquisitions are made within a period of seven days. These rules also require accelerated disclosure of acquisitions of shares or rights over shares relating to such holdings.

Frustrating Action

Under the Irish Takeover Rules, our board of directors is not permitted to take any action which might frustrate an offer for our shares once the board of directors has received an approach which may lead to an offer or has reason to believe an offer is imminent except as noted below. Potentially frustrating actions such as (i) the issue of shares, options or convertible securities, or the redemption or purchase of own securities (other than under a contract entered into prior to the announcement of the offer or the board having reason to believe an offer is imminent), (ii) material acquisitions or disposals, (iii) entering into contracts other than in the ordinary course of business or (iv) any action, other than seeking alternative offers, which may result in frustration of an offer, are prohibited during the course of an offer or at any time during which the board has reason to believe an offer is imminent. Exceptions to this prohibition are available where:

- the action is approved by the offeree at a general meeting; or
- with the consent of the Irish Takeover Panel where:
  - the Irish Takeover Panel is satisfied the action would not constitute a frustrating action;
  - the holders of 50% of the voting rights state in writing that they approve the proposed action and would vote in favor of it at a general meeting;
  - the action is taken in accordance with a contract entered into prior to the announcement of the offer; or
  - the decision to take such action was made before the announcement of the offer and either has been at least partially implemented or is in the ordinary course of business.

Corporate Governance

Our articles of association delegate the day-to-day management of us to the board of directors. The board of directors may then delegate the management of us to committees, executives or to a management team, but regardless, the directors will remain responsible, as a matter of Irish law, for the proper management of our affairs.

Our corporate governance guidelines and general approach to corporate governance as reflected in our memorandum and articles of association and our internal policies and procedures are guided by U.S. practice and applicable federal securities laws and regulations and the requirements of the New York Stock Exchange. Although we are an Irish public limited company, we are not subject to the listing rules of Euronext Dublin or the listing rules of the U.K. Financial Conduct Authority and we are therefore not subject to, nor will we adopt, the U.K. Corporate Governance Code, any guidelines issued by the Investment Association or the Pre-Emption Group Statement of Principles, or any other non-statutory Irish or U.K. governance standards or guidelines. While there are many similarities and overlaps between the U.S. corporate governance standards applied by us and the U.K. Corporate Governance Code and other Irish/U.K. governance standards or guidelines, there are differences, in particular relating to the extent of the authorization to issue share capital and effect share repurchases that may be granted to the board and the criteria for determining the independence of directors.

Duration; Dissolution; Rights upon Liquidation

Our duration is unlimited. We may be dissolved and wound up at any time by way of either a shareholders' voluntary winding up or a creditors' winding up. In the case of a shareholders' voluntary winding up, the consent of not less than 75% of the votes cast by our shareholders is required. We may also be dissolved by way of court order on the application of a creditor or the Director of Corporate Enforcement (where the court is satisfied on a petition of the Director of Corporate Enforcement that it is in the public interest that we should be would up), or by the Companies Registration Office (by way of strike-off) as an enforcement measure where we have failed to file certain returns.

The rights of the shareholders to a return of our assets on dissolution or winding up, following the settlement of all claims of creditors, may be prescribed in our memorandum and articles of association or the terms of any preferred shares issued by our directors from time to time. The holders of preferred shares in particular may have the right to priority in a dissolution or winding up of us. If the articles of association contain no specific provisions in respect of a dissolution or winding up then, subject to the priorities of any creditors, the assets will be distributed to shareholders in proportion to the paid-up par value of the shares held. Our articles of association provide that our ordinary shareholders are entitled to participate pro rata in a winding up, but their right to do so may be subject to the rights of any preferred shareholders to participate under the terms of any series or class of preferred shares.

Stock Exchange Listing

Our ordinary shares are listed on the New York Stock Exchange under the symbol “JCI”.

Uncertificated Shares

Pursuant to the Irish Companies Act a shareholder is entitled to be issued a share certificate on request and subject to payment of a nominal fee.

Transfer and Registration of Shares

Our share register is maintained by its transfer agent. Registration in this share register is determinative of membership in us. A shareholder of ours who holds shares beneficially is not the holder of record of such shares. Instead, the depository (for example, Cede & Co., as nominee for DTC) or other nominee is the holder of record of such shares. Accordingly, a transfer of shares from a person who holds such shares beneficially to a person who also holds such shares beneficially through the same depository or other nominee will not be registered in our official share register, as the depository or other nominee will remain the record holder of such shares.
A written instrument of transfer is required under Irish law in order to register on our official share register any transfer of shares (i) from a person who holds such shares directly to any other person, (ii) from a person who holds such shares beneficially to a person who holds such shares directly, or (iii) from a person who holds such shares beneficially to another person who holds such shares beneficially where the transfer involves a change in the depository or other nominee that is the record owner of the transferred shares. An instrument of transfer also is required for a shareholder who directly holds shares to transfer those shares into his or her own broker account (or vice versa). Such instruments of transfer may give rise to Irish stamp duty, which must be paid prior to registration of the transfer on our official Irish share register.

We may, in our absolute discretion, pay or cause one of our affiliates to pay any stamp duty. Our articles of association provide that, in the event of any such payment, we shall be entitled to (i) seek reimbursement from the buyer, (ii) set-off the amount of the stamp duty against future dividends on such shares, and (iii) claim a first and permanent lien on our ordinary shares acquired by such buyer and any dividends paid on such shares. Parties to a share transfer may assume that any stamp duty arising in respect of a transaction in our ordinary shares has been paid unless one or both of such parties is otherwise notified by us.

Our articles of association delegate to our Secretary (or his or her nominee) the authority to execute an instrument of transfer on behalf of a transferring party. In order to help ensure that the official share register is regularly updated to reflect trading of our ordinary shares occurring through normal electronic systems, we regularly produce any required instruments of transfer in connection with any transactions for which we pay stamp duty (subject to the reimbursement and set-off rights described above). In the event that we notify one or both of the parties to a share transfer that we believe stamp duty is required to be paid in connection with such transfer and that we will not pay such stamp duty, such parties may either themselves arrange for the execution of the required instrument of transfer (and may request a form of instrument of transfer from us for this purpose) or request that we execute an instrument of transfer on behalf of the transferring party in a form determined by us. In either event, if the parties to the share transfer have the instrument of transfer duly stamped (to the extent required) and then provide it to our transfer agent, the transferee will be registered as the legal owner of the relevant shares on our official Irish share register (subject to the matters described below).

Our directors have general discretion to decline to register an instrument of transfer unless the transfer is in respect of one class of shares only, the instrument of transfer is accompanied by the certificate of shares to which it relates and such other evidence as the directors may reasonably require to show the right of the transferor to make the transfer, a fee of €10 or such lesser sum is paid to us, the instrument of transfer is in favor of not more than four transferees and it is lodged at our registered office or such other place as the board of directors may appoint.

The registration of transfers may be suspended by the directors at such times and for such period, not exceeding in the whole 30 days in each year, as the directors may from time to time determine.

Formation; Fiscal Year; Registered Office

We were incorporated in Ireland as a public limited company on May 9, 2014 (under the name "Tyco International plc") with company registration number 543654. Our fiscal year ends on September 30 of each year and our registered address is One Albert Quay, Cork, T12 X8N6, Ireland.

No Sinking Fund

The ordinary shares have no sinking fund provisions.

No Liability for Further Calls or Assessments

When the ordinary shares are issued, they will be duly and validly issued, fully paid and nonassessable.

DESCRIPTION OF JCI PLC NOTES

Capitalized terms used in this "*Description of JCI plc Notes*" and not otherwise defined have the meanings set forth under the heading "*—Definitions*" below. For purposes of this "Description of JCI plc Notes" section, (a) the terms "*JCI plc*," "*we*," and "*us*" refer only to Johnson Controls International plc, a public limited company organized under the laws of Ireland, and its successors permitted by the terms of the JCI plc Indenture (as defined below) and (b) the term "Johnson Controls" refers to Johnson Controls International plc and its consolidated subsidiaries.

For purposes of this description, the "JCI plc Notes" mean the following series of notes issues by JCI plc:

Initial Aggregate Principal Amount (millions)	Series of JCI plc Notes
€1,000	1.00% Senior Notes due 2023
$500	3.625% Senior Notes due 2024
$400	6.000% Notes due 2036
$300	5.70% Senior Notes due 2041
$250	5.250% Senior Notes due 2041
$450	4.625% Senior Notes due 2044
$125	6.950% Debentures due December 1, 2045
$450	4.950% Senior Notes due 2064
$42.166	4.625% Notes due 2023
€500	1.375% Notes due 2025
$750	3.900% Notes due 2026
$750	5.125% Notes due 2045
$500	4.500% Senior Notes Due 2047

Each series of JCI plc Notes is a series of debt securities that were issued under an Indenture and a supplemental indenture thereto (collectively, the "*JCI plc Indenture*"), between JCI plc and U.S. Bank Trust Company, National Association (successor in interest to U.S. Bank National Association), as trustee (the "*Trustee*"). Elavon Financial Services DAC, UK Branch, as paying agent for the JCI plc 1.375% Notes due 2025 and 1.000% Senior Notes due 2023 (collectively, the "*JCI plc Euro Notes*"), is also a party to the supplemental indentures related to the issuance of the JCI plc Euro Notes. We also entered into separate agency agreements among us, Elavon Financial Services DAC, UK Branch, as paying agent for the JCI plc Euro Notes, and (1) Elavon Financial Services DAC, as transfer agent and security registrar for the JCI plc notes other than the 1.000% Senior Notes due 2023 and 4.500% Senior Notes Due 2047 and (2) U.S. Bank National Association as transfer agent, security registrar and Trustee for the 1.000% Senior Notes due 2023 and 4.500% Senior Notes Due 2047. The terms of the JCI plc Notes include those expressly set forth in such notes and the JCI plc Indenture and those made part of the JCI plc Indenture by reference to the Trust Indenture Act.

This description is a summary of the material provisions of the JCI plc Notes and the JCI plc Indenture. This description does not restate those agreements and instruments in their entirety. You are encouraged to read the applicable JCI plc Notes and the JCI plc Indenture, as supplemented, which is filed as an exhibit to this Annual Report on Form 10-K, carefully and in their entirety as they contain information not included in this summary.

General

The JCI plc Notes are unsecured, unsubordinated obligations of JCI plc. The Notes rank senior in right of payment to JCI plc's existing and future indebtedness and other obligations that are expressly subordinated in right of payment to the Notes; equal in right of payment to JCI plc's existing and future indebtedness and other obligations that are not so subordinated; effectively junior to any of JCI plc's secured indebtedness and other obligations to the extent of the value of the assets securing such indebtedness or other obligations; and structurally junior to all existing and future indebtedness and other obligations incurred by JCI plc's subsidiaries.

The JCI plc Notes (other than the JCI plc Euro Notes) (the "*JCI plc Dollar Notes*") were issued in book-entry form, represented by Dollar Global Securities (as defined below), and delivered through the facilities of DTC. The JCI plc Euro Notes were issued in book-entry form, represented by Euro Global Securities (as defined below) deposited with or on behalf of a common depositary on behalf of Clearstream and Euroclear and registered in the name of the nominee of the common depositary for the accounts of Clearstream and Euroclear.

The JCI plc Dollar Notes were issued in registered form without interest coupons and only in denominations of $2,000 and whole multiples of $1,000 in excess thereof. The JCI plc Euro Notes were issued in registered form without interest coupons and only in denominations of €100,000 and whole multiples of €1,000 in excess thereof.

The table below sets forth the interest rate and calculation method, interest payment dates, and maturity date for each series of JCI plc Notes. Interest with respect to each series of JCI plc Notes is payable on each interest payment date to the holders of record at the close of business on each corresponding record date indicated below.

Series of JCI plc Notes	Interest Rate and Calculation Method	Interest Payment Dates	Record Dates	Maturity Date
1.00% Senior Notes due 2023	1.000% per annum, calculated based on the actual number of days in the period for which interest is being calculated and the actual number of days from and including the last date on which interest was paid (or March 15, 2017, if no interest has been paid), to but excluding the next scheduled interest payment date (ACTUAL/ACTUAL (ICMA)).	September 15	Preceding September 1	September 15, 2023
3.625% Senior Notes due 2024	3.625% per annum, calculated on the basis of a 360-day year consisting of twelve 30-day months	January 2 and July 2	Preceding December 18 and June 18, respectively	July 2, 2024
6.000% Notes due 2036	6.000% per annum, calculated on the basis of a 360-day year consisting of twelve 30-day months	January 15 and July 15	Preceding January 1 and July 1, respectively	January 15, 2036
5.70% Senior Notes due 2041	5.70% per annum, calculated on the basis of a 360-day year consisting of twelve 30-day months	March 1 and September 1	Preceding February 15 and August 15, respectively	March 1, 2041
5.250% Senior Notes due 2041	5.250% per annum, calculated on the basis of a 360-day year consisting of twelve 30-day months	June 1 and December 1	Preceding May 15 and November 15, respectively	December 1, 2041
4.625% Senior Notes due 2044	4.625% per annum, calculated on the basis of a 360-day year consisting of twelve 30-day months	January 2 and July 2	Preceding December 18 and June 18, respectively	July 2, 2044
6.950% Debentures due December 1, 2045	6.950% per annum, calculated on the basis of a 360-day year consisting of twelve 30-day months	June 1 and December 1	Preceding May 15 and November 15, respectively	December 1, 2045
4.950% Senior Notes due 2064	4.950% per annum, calculated on the basis of a 360-day year consisting of twelve 30-day months	January 2 and July 2	Preceding December 18 and June 18, respectively	July 2, 2064
4.625% Notes due 2023	4.625% per annum, calculated on the basis of a 360-day year consisting of twelve 30-day months	January 15 and July 15	Preceding January 1 and July 1, respectively	January 15, 2023
1.375% Notes due 2025	1.375% per annum, calculated based on the actual number of days in the period for which interest is being calculated and the actual number of days from and including the last date on which interest was paid (or February 25, 2016, if no interest has been paid), to but excluding the next scheduled interest payment date (ACTUAL/ACTUAL (ICMA)).	February 25	Preceding February 10	February 25, 2025
3.900% Notes due 2026	3.900% per annum, calculated on the basis of a 360-day year consisting of twelve 30-day months	February 14 and August 14	Preceding February 1 and August 1, respectively	February 14, 2026
5.125% Notes due 2045	5.125% per annum, calculated on the basis of a 360-day year consisting of twelve 30-day months	March 14 and September 14	Preceding March 1 and September 1, respectively	September 14, 2045
4.500 Senior Notes due 2047	4.500% per annum, calculated on the basis of a 360-day year consisting of twelve 30-day months	February 15 and August 15	Preceding February 1 and August 1, respectively	February 15, 2047

Except as provided below, the JCI plc Notes are not subject to redemption, repurchase or repayment at the option of any holder thereof, upon the occurrence of any particular circumstance or otherwise. The JCI plc Notes do not have the benefit of any sinking fund. The JCI plc Notes are not convertible into or exchangeable for shares or other securities of JCI plc.

JCI plc Indenture May Be Used for Future Issuances

We may, without the consent of the then existing holders of the JCI plc Notes of any series, "re-open" any series of JCI plc Notes and issue additional JCI plc Notes of such series, which additional JCI plc Notes will have the same terms as the JCI plc Notes of such series except for the issue price, issue date and, under some circumstances, the first interest payment date; provided that, if such additional JCI plc Notes are not fungible with the JCI plc Notes of the applicable series for U.S. federal income tax purposes, such additional JCI plc Notes will have a separate CUSIP, ISIN and/or other identifying number, as applicable. Additional JCI plc Notes issued in this manner will form a single series with the JCI plc Notes of the applicable series.

In addition, the JCI plc Indenture does not limit the amount of debt securities that can be issued thereunder and provides that debt securities of any series may be issued thereunder up to the aggregate principal amount that we may authorize from time to time. All debt securities issued as a series, including those issued pursuant to any reopening of a series, will vote together as a single class. Debt securities issued pursuant to the JCI plc Indenture may have terms that differ from those of the JCI plc Notes, as set forth in Section 2.01 of the JCI plc Indenture.

Issuance of JCI plc Euro Notes in Euros

All payments of interest and principal, including payments made upon any redemption or repurchase of the JCI plc Euro Notes, will be payable in euros. If the euro is unavailable to us due to the imposition of exchange controls or other circumstances beyond our control or if the euro is no longer being used by the then member states of the European Monetary Union that have adopted the euro as their currency or for the settlement of transactions by public institutions of or within the international banking community, then all payments in respect of the JCI plc Euro Notes will be made in U.S. dollars until the euro is again available to us or so used. In such circumstances, the amount payable on any date in euros will be converted into U.S. dollars at the rate mandated by the U.S. Federal Reserve Board as of the close of business on the second business day prior to the relevant payment date or, in the event the U.S. Federal Reserve Board has not mandated a rate of conversion, on the basis of the then most recent U.S. dollar/euro exchange rate available on or prior to the second business day prior to the relevant payment date as determined by JCI plc in its sole discretion. Any payment in respect of the JCI plc Euro Notes so made in U.S. dollars will not constitute an Event of Default (as defined below) under the JCI plc Euro Notes or the JCI plc Indenture. Neither the Trustee nor the paying agent for the JCI plc Euro Notes shall have any responsibility for any calculation or conversion in connection with the foregoing.

Optional Redemption

JCI plc Dollar Notes

Prior to the applicable Par Call Date set forth in the table below, JCI plc may, at its option, redeem the JCI plc Dollar Notes of any series (other than the JCI plc Dollar Notes designated as "non-par callable" under the caption "Par Call Date" and/or "non-callable prior to maturity" under the caption "Applicable Spread" in the table below), in whole at any time or in part from time to time (in $1,000 increments, provided that any remaining principal amount thereof shall be at least the minimum authorized denomination thereof), at a redemption price equal to the greater of (the "*Applicable Par Call Date Notes Premium*"):

(i) 100% of the principal amount of the JCI plc Dollar Notes of the applicable series to be redeemed, and

(ii) as determined by the Quotation Agent and delivered to the Trustee in writing, the sum of the present values of the remaining scheduled payments of principal and interest thereon that would be due if the applicable JCI plc Dollar Notes matured on the applicable Par Call Date (exclusive of interest accrued to the redemption date), discounted to the redemption date (assuming a 360-day year consisting of twelve 30-day months) at the Adjusted Redemption Treasury Rate plus the Applicable Spread set forth in the table below, plus, in either situation (i) or (ii), accrued and unpaid interest, if any, thereon to, but excluding, the redemption date (subject to the right of holders of record on the relevant record date to receive interest due on the relevant interest payment date).

On or after the applicable Par Call Date, JCI plc may, at its option, redeem the JCI plc Dollar Notes of any series (other than the JCI plc Dollar Notes designated as "non-par callable" under the caption "Par Call Date" and/or "non-callable prior to maturity" under the caption "Applicable Spread" in the table below), in whole at any time or in part from time to time (in $1,000 increments, provided that any remaining principal amount thereof shall be at least the minimum authorized denomination thereof), at a redemption price equal to 100% of the principal amount of the JCI plc Dollar Notes of the applicable series to be redeemed, plus accrued and unpaid interest, if any, thereon to, but excluding, the redemption date (subject to the right of holders of record on the relevant record date to receive interest due on the relevant interest payment date).

JCI plc may, at its option, redeem each series of JCI plc Dollar Notes designated as "non-par callable" under the caption "Par Call Date" and not designated as "non-callable prior to maturity" under the caption "Applicable Spread" in the table below, in whole at any time or in part from time to time (in $1,000 increments, provided that any remaining principal amount thereof shall be at least the minimum authorized denomination thereof), at a redemption price equal to the greater of (the "*Applicable Non-Par Call Date Notes Premium*"):

(i) 100% of the principal amount of the JCI plc Dollar Notes of the applicable series to be redeemed, and

(ii) as determined by the Quotation Agent and delivered to the Trustee in writing, the sum of the present values of the remaining scheduled payments of principal and interest thereon (exclusive of interest accrued to the redemption date), discounted to the redemption date (assuming a 360-day year consisting of twelve 30-day months) at the Adjusted Redemption Treasury Rate plus the Applicable Spread set forth in the table below, plus, in either situation (i) or (ii), accrued and unpaid interest, if any, thereon to, but excluding, the redemption date (subject to the right of holders of record on the relevant record date to receive interest due on the relevant interest payment date).

Each series of JCI plc Dollar Notes designated as "non-callable prior to maturity" under the caption "Applicable Spread" in the table below is not redeemable prior to maturity.

The Par Call Date, Applicable Spread and minimum authorized denominations for each series of JCI plc Dollar Notes are as follows:

Series of JCI plc Dollar Notes	Par Call Date	Applicable Spread	Minimum Authorized Denominations
3.625% Senior Notes due 2024	April 2, 2024 (three months prior to the maturity date)	15 basis points	$ 2,000
6.000% Notes due 2036	non-par callable	25 basis points	$ 2,000
5.70% Senior Notes due 2041	non-par callable	20 basis points	$ 2,000
5.250% Senior Notes due 2041	June 1, 2041 (six months prior to the maturity date)	35 basis points	$ 2,000
4.625% Senior Notes due 2044	January 2, 2044 (six months prior to the maturity date)	20 basis points	$ 2,000
6.950% Debentures due 2045	non-par callable	non-callable prior to maturity	$ 2,000
4.950% Senior Notes due 2064	January 2, 2064 (six months prior to the maturity date)	25 basis points	$ 2,000
4.625% Notes due 2023	October 15, 2022 (three months prior to the maturity date)	20 basis points	$ 2,000
3.900% Notes due 2026	November 14, 2025 (three months prior to the maturity date)	30 basis points	$ 2,000
5.125% Notes due 2045	March 14, 2045 (six months prior to the maturity date)	35 basis points	$ 2,000
4.500 Senior Notes due 2047	August 15, 2046 (six months prior to the maturity date)	25 basis points	$ 2,000

"*Adjusted Redemption Treasury Rate*," with respect to any redemption date for the JCI plc Dollar Notes of any series, means the rate equal to the semiannual equivalent yield to maturity or interpolated (on a 30/360 day count basis) yield to maturity of the Comparable Redemption Treasury Issue, assuming a price for the Comparable Redemption Treasury Issue (expressed as a percentage of its principal amount) equal to the Comparable Redemption Treasury Price for such redemption date.

"*Comparable Redemption Treasury Issue*" means the United States Treasury security selected by the Quotation Agent as having a maturity comparable to the remaining term of the JCI plc Dollar Notes to be redeemed that would be utilized at the time of selection and in accordance with customary financial practice in pricing new issues of corporate debt securities of comparable maturity to the remaining term of such JCI plc Dollar Notes.

"*Comparable Redemption Treasury Price*," with respect to any redemption date for the JCI plc Dollar Notes of any series, means (i) the average of the Redemption Reference Treasury Dealer Quotations for such redemption date, after excluding the highest and lowest such Redemption Reference Treasury Dealer Quotations (unless there is more than one highest or lowest quotation, in which case only one such highest and/or lowest quotation shall be excluded), or (ii) if the Quotation Agent obtains fewer than four such Redemption Reference Treasury Dealer Quotations, the average of all such Redemption Reference Treasury Dealer Quotations.

"*Independent Investment Banker*" means one of the Redemption Reference Treasury Dealers appointed by us.

"*Quotation Agent*" means a Redemption Reference Treasury Dealer appointed as such agent by JCI plc.

"*Redemption Reference Treasury Dealer*" means (1) each of Citigroup Global Markets Inc., Merrill Lynch, Pierce, Fenner & Smith Incorporated (with respect to the JCI plc Dollar Notes other than the 4.500 Senior Notes due 2047) and J.P. Morgan Securities LLC (with respect to the 4.500 Senior Notes due 2047) (or their respective Affiliates that are Primary Treasury Dealers (as defined below)) and their respective successors and (2) two other Primary Treasury Dealers selected by JCI plc after consultation with the Independent Investment Banker; provided, however, that if any of the foregoing shall cease to be a primary U.S. government securities dealer in New York City (a "*Primary Treasury Dealer*"), JCI plc will substitute therefor another Primary Treasury Dealer.

"Redemption Reference Treasury Dealer Quotations," with respect to each Redemption Reference Treasury Dealer and any redemption date for the JCI plc Dollar Notes of any series, means the average, as determined by the Quotation Agent, of the bid and offer prices at 11:00 a.m., New York City time, for the Comparable Redemption Treasury Issue (expressed in each case as a percentage of its principal amount) for settlement on the redemption date quoted in writing to the Quotation Agent by such Redemption Reference Treasury Dealer on the third business day preceding such redemption date.

JCI plc Euro Notes

Prior to November 25, 2024 (three months prior to the maturity date), JCI plc may, at its option, redeem the JCI plc 1.375% Notes due 2025, in whole at any time or in part from time to time (in €1,000 increments, provided that any remaining principal amount thereof shall be at least the minimum authorized denomination of €100,000), at a redemption price equal to the greater of (the "*1.375%*

Notes due 2025 Premium") (i) 100% of the principal amount of the JCI plc 1.375% Notes due 2025 to be redeemed and (ii) the sum of the present values of the Remaining Scheduled Payments (as defined below) discounted to the redemption date, on an annual basis (ACTUAL/ACTUAL (ICMA)), at a rate equal to the Treasury Rate (as defined below) plus 20 basis points plus, in either case, accrued and unpaid interest, if any, thereon to, but excluding, the redemption date (subject to the right of holders of record on the relevant record date to receive interest due on the relevant interest payment date).

On or after November 25, 2024 (three months prior to their maturity date), JCI plc may, at its option, redeem the JCI plc 1.375% Notes due 2025, in whole at any time or in part from time to time (in €1,000 increments, provided that any remaining principal amount thereof shall be at least the minimum authorized denomination of €100,000), at a redemption price equal to 100% of the principal amount of the JCI plc 1.375% Notes due 2025 to be redeemed, plus accrued and unpaid interest, if any, thereon to, but excluding, the redemption date (subject to the right of holders of record on the relevant record date to receive interest due on the relevant interest payment date).

Prior to June 15, 2023 (three months prior to the maturity date), JCI plc may, at its option, redeem the JCI plc 1.000% Senior Notes due 2023, in whole at any time or in part from time to time (in €1,000 increments, provided that any remaining principal amount thereof shall be at least the minimum authorized denomination of €100,000), at a redemption price equal to the greater of (the "1.000*% Notes due 2023 Premium*" and, collectively with the 1.375% Notes due 2025 Premium, the "*Applicable Euro Notes Premium"*) (i) 100% of the principal amount of the JCI plc 1.000% Senior Notes due 2023 to be redeemed and (ii) the sum of the present values of the Remaining Scheduled Payments (as defined below) discounted to the redemption date, on an annual basis (ACTUAL/ACTUAL (ICMA)), at a rate equal to the Treasury Rate (as defined below) plus 20 basis points plus, in either case, accrued and unpaid interest, if any, thereon to, but excluding, the redemption date (subject to the right of holders of record on the relevant record date to receive interest due on the relevant interest payment date).

On or after June 15, 2023 (three months prior to their maturity date), JCI plc may, at its option, redeem the JCI plc 1.000% Senior Notes due 2023, in whole at any time or in part from time to time (in €1,000 increments, provided that any remaining principal amount thereof shall be at least the minimum authorized denomination of €100,000), at a redemption price equal to 100% of the principal amount of the JCI plc 1.000% Senior Notes due 2023 to be redeemed, plus accrued and unpaid interest, if any, thereon to, but excluding, the redemption date (subject to the right of holders of record on the relevant record date to receive interest due on the relevant interest payment date).

"*Treasury Rate*" means the rate per annum (which, if less than zero, shall be deemed to be zero) equal to the annual equivalent yield to maturity of the Reference Bond (as defined below), assuming a price for the Reference Bond (expressed as a percentage of its principal amount) equal to the middle market price of the Reference Bond prevailing at 11:00 a.m. (London time) on the third business day preceding such redemption date as determined by us or an independent investment bank appointed by us.

"*Reference Bond*" means, in relation to any Treasury Rate calculation, a German government bond whose maturity is closest to the maturity of the applicable JCI plc Euro Notes, or if we or an independent investment bank appointed by us considers that such similar bond is not in issue, such other German government bond as we or an independent investment bank appointed by us, with the advice of three brokers of, and/or market makers in, German government bonds selected by us or an independent investment bank appointed by us, determine to be appropriate for determining the Treasury Rate.

"*Remaining Scheduled Payments*" means, with respect to each JCI plc Euro Note to be redeemed, the remaining scheduled payments of principal of and interest on the relevant JCI plc Euro Note that would be due after the related redemption date but for the redemption. If that redemption date is not an interest payment date with respect to a JCI plc Euro Note, the amount of the next succeeding scheduled interest payment on the relevant JCI plc Euro Note will be reduced by the amount of interest accrued on the JCI plc Euro Note to the redemption date.

Redemption Upon Changes in Withholding Taxes

JCI plc may redeem all, but not less than all, of the JCI plc Notes of any series under the following conditions:

- if there is an amendment to, or change in, the laws or regulations of a Relevant Taxing Jurisdiction (as defined below) or any change in the application or official interpretation of such laws, including any action taken by, or a change in published administrative practice of, a taxing authority or a holding by a court of competent jurisdiction, regardless of whether such action, change or holding is with respect to JCI plc, which amendment or change is announced on or after the date of issuance of the applicable JCI plc Notes (or, in the case of any Relevant Taxing Jurisdiction that becomes a Relevant Taxing Jurisdiction after the date of issuance of the applicable JCI plc Notes, after such later date);

- as a result of such amendment or change, JCI plc becomes, or there is a material probability that JCI plc will become, obligated to pay Additional Amounts (as defined below), on the next payment date with respect to the JCI plc Notes of such series;
- JCI plc delivers to the Trustee a written opinion of independent tax counsel to JCI plc of recognized standing to the effect that JCI plc has, or there is a material probability that it will become obligated, to pay Additional Amounts as a result of a change, amendment, official interpretation or application described above; and
- following the delivery of the opinion described in the previous bullet point, JCI plc provides notice of redemption not less than 30 days, but not more than 90 days, prior to the redemption date. The notice of redemption cannot be given more than 90 days before the earliest date on which JCI plc would be otherwise required to pay Additional Amounts, and the obligation to pay Additional Amounts must still be in effect when the notice is given.

Upon the occurrence of each of the bullet points above, JCI plc may redeem the JCI plc Notes of such series at a redemption price equal to 100% of the principal amount thereof, together with accrued and unpaid interest, if any, thereon to, but excluding, the redemption date (subject to the right of holders of record on the relevant record date to receive interest due on the relevant interest payment date).

The foregoing provisions shall apply *mutatis mutandis* to any Successor Person (as defined below) to JCI plc.

Notice of Redemption

Notice of any redemption will be mailed, or delivered electronically if the JCI plc Notes are held by any depositary, at least 30 days but not more than 90 days before the date fixed for such redemption to each holder of JCI plc Notes of a series to be redeemed. If less than all the JCI plc Notes of such series are to be redeemed, the Trustee will select the outstanding JCI plc Notes of such series to be redeemed in accordance with a method that complies with the requirements, if any, of any stock exchange on which such JCI plc Notes are listed, and the applicable procedures of the depositary, if the JCI plc Notes of such series are held by any depositary; provided, however, that with respect to any JCI plc Notes not listed on any stock exchange and/or held by a depositary, the Trustee will select such JCI plc Notes by lot or by such other method that the Trustee considers fair and appropriate.

Interest on such JCI plc Notes or portions of JCI plc Notes will cease to accrue on and after the date fixed for redemption, unless JCI plc defaults in the payment of such redemption price and accrued interest (if any) with respect to any such JCI plc Note or portion thereof.

If any redemption date of any JCI plc Note is not a business day, then payment of principal and interest may be made on the next succeeding business day with the same force and effect as if made on the nominal redemption date and no interest will accrue for the period after such nominal date.

Payment of Additional Amounts

All payments in respect of the JCI plc Notes will be made by JCI plc free and clear of, and without withholding or deduction for or on account of, any present or future taxes, duties, levies, imposts, assessments or governmental charges of whatever nature ("*Taxes*") unless the withholding or deduction of such Taxes is required by law.

In the event that JCI plc is required to withhold or deduct any amount for or on account of any Taxes imposed or levied by or on behalf of Ireland or any other jurisdiction (other than the United States of America) in which JCI plc is organized, resident or doing business for tax purposes or from or through which payments by or on behalf of JCI plc are made, or any political subdivision or any authority thereof or therein (each, but not including the United States of America or any political subdivision or any authority thereof or therein, a "*Relevant Taxing Jurisdiction*") from any payment made under or with respect to any JCI plc Note, JCI plc will pay such additional amounts ("*Additional Amounts*") so that the net amount received by each holder of JCI plc Notes (including Additional Amounts) after such withholding or deduction will equal the amount that such holder would have received if such Taxes had not been required to be withheld or deducted.

Additional Amounts will not be payable with respect to a payment made to a holder of JCI plc Notes or a holder of beneficial interests in Global Securities where such holder is subject to taxation on such payment by the Relevant Taxing Jurisdiction for any reason other than such Person's mere ownership of the JCI plc Notes or beneficial interests or for or on account of:

- any Taxes that are imposed or withheld solely because such holder or a fiduciary, settlor, beneficiary, or member of such holder if such holder is an estate, trust, partnership, limited liability company or other fiscally transparent entity, or a Person holding a power over an estate or trust administered by a fiduciary holder:

    - is or was present or engaged in, or is or was treated as present or engaged in, a trade or business in the Relevant Taxing Jurisdiction or has or had a permanent establishment in the Relevant Taxing Jurisdiction;
    - has or had any present or former connection (other than the mere fact of ownership of such JCI plc Notes) with the Relevant Taxing Jurisdiction, including being or having been a national citizen or resident thereof, being treated as being or having been a resident thereof or being or having been physically present therein;
- any estate, inheritance, gift, transfer, excise, personal property or similar Taxes imposed with respect to the JCI plc Notes;
- any Taxes imposed solely as a result of the presentation of such JCI plc Notes, where presentation is required, for payment on a date more than 30 days after the date on which such payment became due and payable or the date on which payment thereof is duly provided for, whichever is later, except to the extent that the beneficiary or holder thereof would have been entitled to the payment of Additional Amounts had such JCI plc Notes been presented for payment on any date during such 30-day period;
- any Taxes imposed or withheld solely as a result of the failure of such holder or any other Person to comply with applicable certification, information, documentation or other reporting requirements concerning the nationality, residence, identity or connection with the Relevant Taxing Jurisdiction, if such compliance is required by statute or regulation of the Relevant Taxing Jurisdiction as a precondition to relief or exemption from such Taxes;
- any Taxes that are payable by any method other than withholding or deduction by JCI plc or any paying agent from payments in respect of such JCI plc Notes;
- any Taxes required to be withheld by any paying agent from any payment in respect of any JCI plc Notes if such payment can be made without such withholding by at least one other paying agent;
- any withholding or deduction for Taxes which would not have been imposed if the relevant JCI plc Notes had been presented to another paying agent in a Member State of the European Union;
- any withholding or deduction required pursuant to sections 1471 through 1474 of the U.S. Internal Revenue Code of 1986, as amended (or any amended or successor provisions), any regulations, rules, practices or agreements entered into pursuant thereto, official interpretations thereof or any law implementing an intergovernmental approach thereto; or
- any combination of the above conditions.

Additional Amounts also will not be payable to any holder of JCI plc Notes or the holder of a beneficial interest in a global JCI plc Note that is a fiduciary, partnership, limited liability company or other fiscally transparent entity, or to such holder that is not the sole holder of such JCI plc Note or holder of such beneficial interests in such JCI plc Note, as the case may be. This exception, however, will apply only to the extent that a beneficiary or settlor with respect to the fiduciary, or a beneficial owner or member of the partnership, limited liability company or other fiscally transparent entity, would not have been entitled to the payment of an Additional Amount had the beneficiary, settlor, beneficial owner or member received directly its beneficial or distributive share of the payment.

JCI plc also:

- will make such withholding or deduction of Taxes;
- will remit the full amount of Taxes so deducted or withheld to the relevant tax authority in accordance with all applicable laws;
- will use its commercially reasonable efforts to obtain from each relevant tax authority imposing such Taxes certified copies of tax receipts evidencing the payment of any Taxes so deducted or withheld; and
- upon request, will make available to the holders of the JCI plc Notes, within 90 days after the date the payment of any Taxes deducted or withheld is due pursuant to applicable law, certified copies of tax receipts evidencing such payment by JCI plc (unless, notwithstanding JCI plc's efforts to obtain such receipts, the same are not obtainable).

At least 30 days prior to each date on which any payment under or with respect to the JCI plc Notes of a series is due and payable, if JCI plc will be obligated to pay Additional Amounts with respect to such payment, JCI plc will deliver to the Trustee an Officer's Certificate stating the fact that such Additional Amounts will be payable, the amounts so payable and such other information as is necessary to enable the Trustee to pay such Additional Amounts to holders of such JCI plc Notes on the payment date.

In addition, JCI plc will pay any stamp, issue, registration, documentary or other similar taxes and duties, including interest, penalties and Additional Amounts with respect thereto, payable in a Relevant Taxing Jurisdiction in respect of the creation, issue, offering, enforcement, redemption or retirement of the JCI plc Notes.

The foregoing provisions shall survive any termination or the discharge of the JCI plc Indenture and shall apply *mutatis mutandis* to any Successor Person to JCI plc.

Whenever in the JCI plc Indenture, any JCI plc Notes, or in this "*Description of JCI plc Notes*" there is mentioned, in any context, the payment of principal, premium, if any, redemption price, repurchase price, interest or any other amount payable under or with respect to any JCI plc Notes, such mention shall be deemed to include the payment of Additional Amounts to the extent payable in the particular context.

Offer to Repurchase Upon Change of Control Triggering Event

Upon the occurrence of a Change of Control Triggering Event with respect to a series of JCI plc Notes (other than the 6.000% Notes due 2036 and the 6.950% Debentures due December 1, 2045), unless we have exercised our right to redeem the JCI plc Notes of such series by giving irrevocable notice on or prior to the 30th day after the Change of Control Triggering Event in accordance with the JCI plc Indenture, each holder of JCI plc Notes of such series will have the right to require us to purchase all or a portion of such holder's JCI plc Notes of such series pursuant to the offer described below (the "*Change of Control Offer*"), at a purchase price equal to 101% of the principal amount thereof plus accrued and unpaid interest, if any, thereon to, but excluding, the date of purchase (subject to the right of holders of record on the relevant record date to receive interest due on the relevant interest payment date) (the "*Change of Control Payment*"). If the Change of Control Payment Date (as defined below) falls on a day that is not a business day, the related payment of the Change of Control Payment will be made on the next business day as if it were made on the date such payment was due, and no interest will accrue on the amounts so payable for the period from and after such date to the next business day.

Within 30 days following the date upon which the Change of Control Triggering Event occurs or, at our option, prior to any Change of Control but after the public announcement of the pending Change of Control, we will be required to send, by first class mail, or deliver electronically if the applicable JCI plc Notes are held by any depositary, a notice to each holder of JCI plc Notes of the applicable series, with a copy to the Trustee, which notice will govern the terms of the Change of Control Offer. Such notice will state, among other things, the purchase date, which must be no earlier than 30 days nor later than 60 days from the date such notice is mailed or delivered electronically (or, in the case of a notice mailed or delivered electronically prior to the date of consummation of a Change of Control, no earlier than 30 days nor later than 60 days from the date of the Change of Control Triggering Event), other than as may be required by law (the "*Change of Control Payment Date*"). The notice, if mailed or delivered electronically prior to the date of consummation of the Change of Control, will state that the Change of Control Offer is conditioned on the Change of Control being consummated on or prior to the Change of Control Payment Date.

On the Change of Control Payment Date, we will, to the extent lawful:

- accept or cause a third party to accept for payment all JCI plc Notes of the applicable series properly tendered pursuant to the Change of Control Offer;
- deposit or cause a third party to deposit with the applicable paying agent an amount equal to the Change of Control Payment in respect of all JCI plc Notes of the applicable series properly tendered; and
- deliver or cause to be delivered to the Trustee the JCI plc Notes of the applicable series properly accepted together with an Officer's Certificate stating the aggregate principal amount of JCI plc Notes of each series being repurchased.

We will not be required to make a Change of Control Offer with respect to the JCI plc Notes of the applicable series if a third party makes such an offer in the manner, at the times and otherwise in compliance with the requirements for such an offer made by us and such third party purchases all the JCI plc Notes of the applicable series properly tendered and not withdrawn under its offer. In addition, we will not repurchase any JCI plc Notes of the applicable series if there has occurred and is continuing on the Change of Control Payment Date an Event of Default under the JCI plc Indenture, other than a Default in the payment of the Change of Control Payment on the Change of Control Payment Date.

We must comply in all material respects with the requirements of Rule 14e-1 under the Exchange Act, and any other securities laws and regulations thereunder to the extent those laws and regulations are applicable in connection with the repurchase of the JCI plc Notes of the applicable series as a result of a Change of Control Triggering Event. To the extent that the provisions of any such securities laws or regulations conflict with the Change of Control Offer provisions of the JCI plc Notes of the applicable series, we will be required to comply with those securities laws and regulations and will not be deemed to have breached our obligations under the Change of Control Offer provisions of the JCI plc Notes of such series by virtue of any such conflict.

The definition of Change of Control includes a phrase relating to the direct or indirect sale, lease, transfer, conveyance or other disposition of "all or substantially all" of the properties or assets of JCI plc and its subsidiaries taken as a whole. Although there is a limited body of case law interpreting the phrase "substantially all," there is no precise, established definition of the phrase under applicable law. Accordingly, the applicability of the requirement that we offer to repurchase the JCI plc Notes as a result of a sale, lease, transfer, conveyance or other disposition of less than all of the assets of JCI plc and its subsidiaries taken as a whole to another "person" or "group" (as those terms are used in Section 13(d)(3) of the Exchange Act) may be uncertain.

Other Provisions of the JCI plc Euro Notes

Claims against JCI plc for the payment of principal or Additional Amounts, if any, of the JCI plc Euro Notes will be prescribed ten years after the applicable due date for payment thereof. Claims against JCI plc for the payment of interest, if any, of the JCI plc Euro Notes will be prescribed five years after the applicable due date for payment of interest.

Certain Covenants

The JCI plc Indenture contains the following covenants:

Limitation on Liens

JCI plc will not, and will not permit any Restricted Subsidiary to, issue, incur, assume or guarantee any Indebtedness that is secured by a lien upon any asset that at the time of such issuance, assumption or guarantee constitutes a Principal Property, or any shares of stock of or Indebtedness issued by any Restricted Subsidiary, whether now owned or hereafter acquired, without effectively providing that, for so long as such lien shall continue in existence with respect to such secured Indebtedness, the JCI plc Notes and any other debt securities issued pursuant to the Indenture and any supplement thereto (together with, if JCI plc shall so determine, any other Indebtedness of JCI plc ranking equally with the JCI plc Notes and any other debt securities issued pursuant to the Indenture and any supplement thereto, it being understood that for purposes hereof, Indebtedness which is secured by a lien and Indebtedness which is not so secured shall not, solely by reason of such lien, be deemed to be of different ranking) shall be equally and ratably secured by a lien ranking ratably with or equal to (or at JCI plc's option prior to) such secured Indebtedness; provided, however, that the foregoing covenant shall not apply to:

- liens existing on the date the JCI plc Notes of the applicable series are first issued;
- liens on the stock, assets or Indebtedness of a Person existing at the time such Person becomes a Restricted Subsidiary, unless created in contemplation of such Person becoming a Restricted Subsidiary;
- liens on any assets or Indebtedness of a Person existing at the time such Person is merged with or into or consolidated with or acquired by JCI plc or a Restricted Subsidiary or at the time of a purchase, lease or other acquisition of the assets of a corporation or firm as an entirety or substantially as an entirety by JCI plc or any Restricted Subsidiary; provided, however, that no such lien shall extend to any other Principal Property of JCI plc or such Restricted Subsidiary prior to such acquisition or to any other Principal Property thereafter acquired other than additions to such acquired property;
- liens on any Principal Property existing at the time of acquisition thereof by JCI plc or any Restricted Subsidiary, or liens to secure the payment of the purchase price of such Principal Property by JCI plc or any Restricted Subsidiary, or to secure any Indebtedness incurred, assumed or guaranteed by JCI plc or a Restricted Subsidiary for the purpose of financing all or any part of the purchase price of such Principal Property or improvements or construction thereon, which Indebtedness is incurred, assumed or guaranteed prior to, at the time of or within one year after such acquisition, or in the case of real property, completion of such improvement or construction or commencement of full operation of such property, whichever is later; provided, however, that in the case of any such acquisition, construction or improvement, the lien shall not apply to any other Principal Property, other than the Principal Property so acquired, constructed or improved, and accessions thereto and improvements and replacements thereof and the proceeds of the foregoing;
- liens securing Indebtedness owing by any Restricted Subsidiary to JCI plc or a subsidiary thereof;
- liens in favor of the United States of America or any State thereof, or any department, agency or instrumentality or political subdivision of the United States of America or any State thereof, or in favor of any other country or any political subdivision thereof, to secure partial, progress, advance or other payments pursuant to any contract, statute, rule or regulation or to secure any Indebtedness incurred or guaranteed for the purpose of financing all or any part of the purchase price, or, in the case of real property, the cost of construction or improvement, of the Principal Property subject to such liens, including liens incurred in connection with pollution control, industrial revenue or similar financings;
- pledges, liens or deposits under workers' compensation or similar legislation, and liens thereunder that are not currently dischargeable, or in connection with bids, tenders, contracts, other than for the payment of money, or leases to which JCI plc or any Restricted Subsidiary is a party, or to secure the public or statutory obligations of JCI plc or any Restricted Subsidiary, or in connection with obtaining or maintaining self-insurance, or to obtain the benefits of any law, regulation or arrangement pertaining to unemployment insurance, old age pensions, social security or similar matters, or to secure surety, performance, appeal or customs bonds to which JCI plc or any Restricted Subsidiary is a party, or in litigation or other proceedings in connection with the matters heretofore referred to in this clause, such as interpleader proceedings, and other similar pledges, liens or deposits made or incurred in the ordinary course of business;
- liens created by or resulting from any litigation or other proceeding that is being contested in good faith by appropriate proceedings, including liens arising out of judgments or awards against JCI plc or any Restricted Subsidiary with respect

to which JCI plc or such Restricted Subsidiary in good faith is prosecuting an appeal or proceedings for review or for which the time to make an appeal has not yet expired; or final unappealable judgment liens which are satisfied within 15 days of the date of judgment; or liens incurred by JCI plc or any Restricted Subsidiary for the purpose of obtaining a stay or discharge in the course of any litigation or other proceeding to which JCI plc or such Restricted Subsidiary is a party;

- liens for taxes or assessments or governmental charges or levies not yet due or delinquent; or that can thereafter be paid without penalty, or that are being contested in good faith by appropriate proceedings; landlord's liens on property held under lease; and any other liens or charges incidental to the conduct of the business of JCI plc or any Restricted Subsidiary, or the ownership of their respective assets, that were not incurred in connection with the borrowing of money or the obtaining of advances or credit and that, in the opinion of the Board of Directors of JCI plc, do not materially impair the use of such assets in the operation of the business of JCI plc or such Restricted Subsidiary or the value of such Principal Property for the purposes of such business;
- liens to secure JCI plc's or any Restricted Subsidiary's obligations under agreements with respect to spot, forward, future and option transactions, entered into in the ordinary course of business;
- liens not permitted by the foregoing clauses, inclusive, if at the time of, and after giving effect to, the creation or assumption of any such lien, the aggregate amount of all outstanding Indebtedness of JCI plc and its Restricted Subsidiaries, without duplication, secured by all such liens not so permitted by the foregoing bullets, inclusive, together with the Attributable Debt in respect of Sale and Lease-Back Transactions permitted by the first bullet under "*Limitation on Sale and Lease-Back Transactions*" below, do not exceed the greater of $100,000,000 and 10% of Consolidated Net Worth; and
- any extension, renewal or replacement (or successive extensions, renewals or replacements) in whole or in part, of any lien referred to in the foregoing bullets inclusive; provided, however, that the principal amount of Indebtedness secured thereby unless otherwise excepted under the foregoing bullets shall not exceed the principal amount of Indebtedness so secured at the time of such extension, renewal or replacement (plus any premium, fee, cost, expense or charge payable in connection with any such extension, renewal or replacement), and that such extension, renewal or replacement shall be limited to all or a part of the assets, or any replacements therefor, that secured the lien so extended, renewed or replaced, plus improvements and construction on such assets.

Limitation on Sale and Lease-Back Transactions

JCI plc will not, and will not permit any Restricted Subsidiary to, enter into any Sale and Lease-Back Transaction unless:

- JCI plc or such Restricted Subsidiary, at the time of entering into a Sale and Lease-Back Transaction, would be entitled to incur Indebtedness secured by a lien on the Principal Property to be leased in an amount at least equal to the Attributable Debt in respect of such Sale and Lease-Back Transaction, without equally and ratably securing the JCI plc Notes of the applicable series pursuant to the covenant described under "*Limitations on Liens*" above; or
- the direct or indirect proceeds of the sale of the Principal Property to be leased are at least equal to the fair value of such Principal Property, as determined by JCI plc's Board of Directors in good faith, and an amount equal to the net proceeds from the sale of the assets so leased is applied, within 180 days of the effective date of any such Sale and Lease-Back Transaction, to the purchase or acquisition (or, in the case of real property, commencement of the construction) of assets or to the retirement (other than at maturity or pursuant to a mandatory sinking fund or mandatory redemption or prepayment provision) of the JCI plc Notes and any other debt securities issued pursuant to the Indenture and any supplement thereto or of Funded Indebtedness ranking on a parity with or senior to the JCI plc Notes and any other debt securities issued pursuant to the Indenture and any supplement thereto; provided that there shall be credited to the amount of net proceeds required to be applied pursuant to this provision an amount equal to the sum of (i) the principal amount of the JCI plc Notes and any other debt securities issued pursuant to the Indenture and any supplement thereto delivered within 180 days of the effective date of such Sale and Lease-Back Transaction to the Trustee for retirement and cancellation and (ii) the principal amount of other Funded Indebtedness voluntarily retired by JCI plc within such 180-day period, excluding retirements of the JCI plc Notes and any other debt securities issued pursuant to the Indenture and any supplement thereto and other Funded Indebtedness at maturity or pursuant to mandatory sinking fund or mandatory redemption or prepayment provisions.

Merger and Consolidation

JCI plc will not, directly or indirectly, consolidate with or merge with or into, or convey, transfer or lease all or substantially all its assets in one or a series of related transactions to, any Person, unless:

(1) the resulting, surviving or transferee Person (the "*Successor Person*") will be a corporation, limited liability company, public limited company, limited partnership or other entity organized and existing under the laws of (u) the United States of America, any State thereof or the District of Columbia, (v) Ireland, (w) England and Wales, (x) Jersey, (y) any member state of the European Union as in effect on the date the JCI plc Notes of the applicable series are first issued or

(z) Switzerland; provided that the Successor Person (if not JCI plc) will expressly assume, by a supplemental indenture, executed and delivered to the Trustee, in form reasonably satisfactory to the Trustee, all the obligations of JCI plc under the JCI plc Notes of the applicable series and the JCI plc Indenture;

(2) immediately after giving effect to such transaction (and treating any Indebtedness which becomes an obligation of the Successor Person or any Restricted Subsidiary as a result of such transaction as having been incurred by the Successor Person or such Restricted Subsidiary at the time of such transaction), no Default shall have occurred and be continuing; and

(3) JCI plc shall have delivered to the Trustee an Officer's Certificate and an Opinion of Counsel under the JCI plc Indenture, each stating that such consolidation, merger or transfer and such supplemental indenture (if any) comply with the JCI plc Indenture.

Notwithstanding the foregoing, (A) any conveyance, transfer or lease of assets between or among JCI plc and its subsidiaries shall not be prohibited under the JCI plc Indenture and (B) JCI plc may, directly or indirectly, consolidate with or merge with or into an Affiliate incorporated solely for the purpose of reincorporating JCI plc in another jurisdiction within the United States of America, any State thereof or the District of Columbia, Ireland, England and Wales, Jersey, any member state of the European Union as in effect on the date the JCI plc Notes of the applicable series are first issued or Switzerland to realize tax or other benefits.

The Successor Person will succeed to, and be substituted for, and may exercise every right and power of, JCI plc under the JCI plc Indenture, and the predecessor issuer, other than in the case of a lease, will be automatically released from all obligations under the JCI plc Notes and the JCI plc Indenture, including, without limitation, the obligation to pay the principal of and interest on the JCI plc Notes of the applicable series.

Reports by JCI plc

So long as any JCI plc Notes are outstanding, JCI plc shall file with the Trustee, within 15 days after JCI plc is required to file with the SEC, copies of the annual reports and of the information, documents and other reports (or copies of such portions of any of the foregoing as the SEC may from time to time by rules and regulations prescribe) that JCI plc may be required to file with the SEC pursuant to Section 13 or Section 15(d) of the Exchange Act. JCI plc shall be deemed to have complied with the previous sentence to the extent that such information, documents and reports are filed with the SEC via EDGAR, or any successor electronic delivery procedure; provided, however, that the Trustee shall have no obligation whatsoever to determine whether or not such information, documents or reports have been filed pursuant to the EDGAR system (or its successor). Delivery of such reports, information and documents to the Trustee is for informational purposes only and the Trustee's receipt of such shall not constitute constructive notice of any information contained therein or determinable from information contained therein, including JCI plc's compliance with any of its covenants under the JCI plc Indenture (as to which the Trustee is entitled to rely exclusively on Officer's Certificates).

JCI plc will furnish to the Trustee on or before 120 days after the end of each fiscal year an Officer's Certificate stating that in the course of the performance by the signers of their duties as Officers of JCI plc, they would normally have knowledge of any Default by JCI plc in the performance or fulfillment or observance of any covenants or agreements contained in the JCI plc Indenture during the preceding fiscal year, stating whether or not they have knowledge of any such Default and, if so, specifying each such Default of which the signers have knowledge and the nature thereof.

Listing

The JCI plc Notes are listed on the New York Stock Exchange. We have no obligation to maintain such listing, and we may delist the JCI plc Notes at any time.

Events of Default

As to any series of JCI plc Notes, an "*Event of Default*" means any one of the following events (whatever the reason for such Event of Default and whether it shall be voluntary or involuntary or be effected by operation of law or pursuant to any judgment, decree or order of any court or any order, rule or regulation of any administrative or governmental body):

(1) failure to pay any interest on the JCI plc Notes of that series when due, which failure continues for 30 days;

(2) failure to pay principal or premium, if any, with respect to the JCI plc Notes of that series when due;

(3) failure on the part of JCI plc to observe or perform any other covenant, warranty or agreement in the JCI plc Notes of that series, or in the JCI plc Indenture as it relates to the JCI plc Notes of that series, other than a covenant, warranty or agreement, a Default in whose performance or whose breach is specifically dealt with elsewhere in the section of the JCI plc

Indenture governing Events of Default, if the failure continues for 90 days after written notice by the Trustee or the holders of at least 25% in aggregate principal amount of the JCI plc Notes of that series then outstanding;

(4) an Event of Default with respect to any other series of debt securities issued under the JCI plc Indenture or an uncured or unwaived failure to pay principal of or interest on any of our other obligations for borrowed money beyond any period of grace with respect thereto if, in either case, (a) the aggregate principal amount thereof is in excess of $200,000,000; and (b) the default in payment is not being contested by us in good faith and by appropriate proceedings; and

(5) specified events of bankruptcy, insolvency, receivership or reorganization.

However, the Event of Default in clause (4) above is subject to the following:

- if such Event of Default with respect to such other series of debt securities issued under the JCI plc Indenture or such default in payment with respect to such other obligations for borrowed money shall be remedied or cured by JCI plc or waived by the requisite holders of such other series of debt securities or such other obligations for borrowed money, then the Event of Default under the JCI plc Indenture by reason thereof shall be deemed likewise to have been thereupon remedied, cured or waived without further action upon the part of either the Trustee or any of the holders of JCI plc Notes; and

- subject to certain duties, responsibilities and rights of the Trustee under the JCI plc Indenture, the Trustee shall not be charged with knowledge of any such Event of Default with respect to such other series of debt securities issued under the JCI plc Indenture or such payment default with respect to such other obligations for borrowed money unless written notice thereof shall have been given to a Trust Officer of the Trustee by JCI plc, by the holder or an agent of the holder of such other obligations for borrowed money, by the trustee then acting under any indenture or other instrument under which such payment default with respect to such other obligations for borrowed money shall have occurred, or by the holders of not less than 25% in aggregate principal amount of outstanding debt securities of such other series.

Notice and Declaration of Defaults

The JCI plc Indenture provides that the Trustee will, within the later of 90 days after the occurrence of a Default with respect to any series for which there are JCI plc Notes outstanding which is continuing and which is known to a Trust Officer of the Trustee, or 60 days after such Default is actually known to such Trust Officer of the Trustee or written notice of such Default is received by the Trustee, give to the holders of such JCI plc Notes notice, by mail as the names and addresses of such holders appear on the security register, or electronically if such JCI plc Notes are held by any depositary, of all uncured Defaults known to it, including events specified above without grace periods, unless such Defaults shall have been cured before the giving of such notice; provided, that except in the case of Default in the payment of the principal of, premium, if any, or interest on any of the JCI plc Notes of any series, or in the payment of any sinking fund installment with respect to the JCI plc Notes of any series, the Trustee shall be protected in withholding such notice to the holders if the Trustee in good faith determines that withholding of such notice is in the interests of the holders of the JCI plc Notes of such series.

The Trustee or the holders of not less than 25% in aggregate principal amount of the outstanding JCI plc Notes of any series may declare the JCI plc Notes of that series immediately due and payable upon the occurrence of any Event of Default. The holders of a majority in principal amount of the outstanding JCI plc Notes of all series issued under the JCI plc Indenture and any supplement thereto affected by such waiver (voting as one class), on behalf of the holders of all of the JCI plc Notes of all such series, may waive any existing Default and its consequences, except a Default in the payment of principal, premium, if any, or interest, including sinking fund payments (provided, however, that only holders of a majority in principal amount of the JCI plc Notes of an applicable series may rescind an acceleration with respect to such series and its consequences, including any related payment default that resulted from such acceleration).

Actions upon Default

In case an Event of Default with respect to any series of JCI plc Notes occurs and is continuing, the JCI plc Indenture provides that the Trustee will be under no obligation to exercise any of its rights or powers under the JCI plc Indenture at the request, order or direction of any of the holders of JCI plc Notes outstanding of any series unless the applicable holders have offered to the Trustee reasonable security and indemnity, satisfactory to the Trustee in its sole discretion, against any loss, liability or expense which may be incurred thereby. The right of a holder to institute a proceeding with respect to the JCI plc Notes of the applicable series is subject to conditions precedent including notice and indemnity to the Trustee, but the right of any holder of any applicable JCI plc Note to receive payment of the principal of, and premium, if any, and interest on their due dates or to institute suit for the enforcement thereof shall not be impaired or affected without the consent of such holder.

The holders of a majority in aggregate principal amount of the JCI plc Notes outstanding of the series in Default will have the right to direct the time, method and place for conducting any proceeding for any remedy available to the Trustee or exercising any power or trust conferred on the Trustee, in each case with respect to such series. Any direction by such holders will be in accordance with law and the provisions of the JCI plc Indenture. Subject to certain provisions of the JCI plc Indenture, the Trustee shall have the right to decline to follow any such direction if the Trustee in good faith, by a Trust Officer or Trust Officers of the Trustee, shall determine that the action or proceeding so directed may not be lawfully taken, would involve the Trustee in personal liability, would be materially or unjustly prejudicial to the rights of holders of JCI plc Notes of such series not joining in such direction or would be unduly prejudicial to the interests of the holders of JCI plc Notes and other debt securities issued under the JCI plc Indenture of all series not joining in the giving of such direction. The Trustee will be under no obligation to act in accordance with any such direction unless the applicable holders offer the Trustee reasonable security and indemnity, satisfactory to the Trustee in its sole discretion, against costs, expenses and liabilities which may be incurred thereby.

Modification of the JCI plc Indenture

JCI plc and the Trustee may from time to time and at any time enter into an indenture or indentures supplemental to the JCI plc Indenture, which shall conform to the provisions of the Trust Indenture Act as then in effect, without the consent of the holders of any series of JCI plc Notes for one or more of the following purposes:

- to cure any ambiguity, defect or inconsistency in the JCI plc Indenture or JCI plc Notes of any series, including making any such changes as are required for the JCI plc Indenture to comply with the Trust Indenture Act;
- to add an additional obligor on the JCI plc Notes or to add a guarantor of any outstanding series of JCI plc Notes, or to evidence the succession of another Person to JCI plc or any additional obligor or guarantor of the JCI plc Notes, or successive successions, and the assumption by the Successor Person of the covenants, agreements and obligations of JCI plc or such obligor or guarantor, as the case may be, pursuant to provisions in the JCI plc Indenture concerning consolidation, merger, the sale of assets or successor entities;
- to provide for uncertificated debt securities in addition to or in place of certificated debt securities;
- to add to the covenants of JCI plc for the benefit of the holders of any outstanding series of JCI plc Notes (and if such covenants are to be for the benefit of less than all outstanding series of debt securities, stating that such covenants are expressly being included solely for the benefit of such series) or to surrender any of JCI plc's rights or powers under the JCI plc Indenture;
- to add any additional Events of Default for the benefit of the holders of any outstanding series of JCI plc Notes (and if such Events of Default are to be applicable to less than all outstanding series, stating that such Events of Default are expressly being included solely to be applicable to such series);
- to change or eliminate any of the provisions of the JCI plc Indenture, provided that any such change or elimination shall not become effective with respect to any outstanding JCI plc Note of any series created prior to the execution of such supplemental indenture which is entitled to the benefit of such provision;
- to secure the JCI plc Notes of any series;
- to make any other change that does not adversely affect the rights of any holder of outstanding JCI plc Notes in any material respect;
- to provide for the issuance of and establish the form and terms and conditions of a series of debt securities, to provide which, if any, of the covenants of JCI plc shall apply to such series, to provide which of the events of default set forth in the base indenture shall apply to such series, to name one or more guarantors and provide for guarantees of such series, to provide for the terms and conditions upon which the guarantee by any guarantor of such series may be released or terminated, or to define the rights of the holders of such series of debt securities;
- to issue additional JCI plc Notes of any series to the extent permitted by the JCI plc Indenture; provided that such additional JCI plc Notes have the same terms as, and be deemed part of the same series as, the applicable series of JCI plc Notes to the extent required under the JCI plc Indenture; or
- to evidence and provide for the acceptance of appointment under the JCI plc Indenture by a successor Trustee with respect to the JCI plc Notes of one or more series and to add to or change any of the provisions of the JCI plc Indenture as shall be necessary to provide for or facilitate the administration of the trust thereunder by more than one Trustee.

In addition, under the JCI plc Indenture, with the consent (evidenced as provided in the JCI plc Indenture) of the holders of not less than a majority in aggregate principal amount of the outstanding debt securities of all series affected by such supplemental indenture or indentures (voting as one class), JCI plc and the Trustee from time to time and at any time may enter into an indenture or indentures supplemental to the JCI plc Indenture for the purpose of adding any provisions to or changing in any manner or eliminating any of the provisions of the JCI plc Indenture or of any supplemental indenture thereto or of modifying in any manner not covered by the immediately preceding paragraph the rights of the holders of the debt securities of each such series under the JCI plc Indenture. However, the following changes may only be made with the consent of each holder of outstanding JCI plc Notes affected:

- extend a fixed maturity of or any installment of principal of any JCI plc Notes of any series or reduce the principal amount thereof or reduce the amount of principal of any original issue discount security that would be due and payable upon declaration of acceleration of the maturity thereof;
- reduce the rate of or extend the time for payment of interest on any JCI plc Note of any series;
- reduce the premium payable upon the redemption of any JCI plc Note of any series;
- make any JCI plc Note of any series payable in currency other than that stated in the applicable JCI plc Note;
- impair the right to institute suit for the enforcement of any payment in respect of any JCI plc Note of any series on or after the fixed maturity thereof or, in the case of redemption, on or after the redemption date;
- modify the subordination provisions applicable to any JCI plc Note of any series in a manner adverse in any material respect to the holder thereof; or
- reduce the aforesaid percentage of JCI plc Notes of the applicable series, the holders of which are required to consent to any such supplemental indenture or indentures.

A supplemental indenture that changes or eliminates any covenant, event of default set forth in the base indenture or other provision of the JCI plc Indenture that has been expressly included solely for the benefit of one or more particular series of debt securities, if any, or which modifies the rights of the holders of debt securities of such series with respect to such covenant, event of default or other provision, shall be deemed not to affect the rights under the JCI plc Indenture of the holders of securities of any other series.

Notwithstanding anything herein or otherwise, the provisions under the JCI plc Indenture relative to JCI plc's obligation to make any offer to repurchase the JCI plc Notes of any series as a result of a Change of Control Triggering Event as provided under Section 4.08 of the base indenture may be waived or modified with the written consent of the holders of a majority in principal amount of the outstanding debt securities of the applicable series or multiple affected series.

It will not be necessary for the consent of the holders of the JCI plc Notes of any series to approve the particular form of any proposed supplement, amendment or waiver, but it shall be sufficient if such consent approves the substance thereof.

Information Concerning the Trustee

If an Event of Default with respect to the JCI plc Notes of a series has occurred and is continuing, the Trustee shall exercise with respect to the JCI plc Notes of such series such of the rights and powers vested in it by the JCI plc Indenture, and use the same degree of care and skill in its exercise, as a prudent Person would exercise or use under the circumstances in the conduct of such Person's own affairs. If an Event of Default has occurred and is continuing, the Trustee will be under no obligation to exercise any of its rights or powers under the JCI plc Indenture at the request, order or direction of any holders of JCI plc Notes of the applicable series, unless such holders shall have offered to the Trustee security and indemnity, satisfactory to it in its sole discretion, against any loss, liability or expense which may be incurred thereby, and then only to the extent required by the terms of the JCI plc Indenture. No provision of the JCI plc Indenture shall require the Trustee to expend or risk its own funds or otherwise incur financial liability in the performance of any of its duties under the JCI plc Indenture or in the exercise of any of its rights or powers.

The Trustee may resign with respect to the JCI plc Notes of a series at any time by giving a written notice to JCI plc. The holders of a majority in principal amount of the outstanding JCI plc Notes of a particular series may remove the Trustee with respect to such series of JCI plc Notes by notifying JCI plc and the Trustee in writing. JCI plc may remove the Trustee if:

- the Trustee has or acquires a "conflicting interest," within the meaning of Section 310(b) of the Trust Indenture Act, and fails to comply with the provisions of Section 310(b) of the Trust Indenture Act, or otherwise fails to comply with the eligibility requirements provided in the JCI plc Indenture and fails to resign after written request therefor by JCI plc in accordance with the JCI plc Indenture;
- the Trustee is adjudged a bankrupt or an insolvent or an order for relief is entered with respect to the Trustee under any bankruptcy law;
- a custodian or public officer takes charge of the Trustee or its property; or
- the Trustee becomes incapable of acting.

If the Trustee resigns or is removed or if a vacancy exists in the office of Trustee with respect to the JCI plc Notes of any series for any reason, JCI plc shall promptly appoint a successor Trustee with respect to the JCI plc Notes of such series.

A resignation or removal of the Trustee and appointment of a successor Trustee shall become effective only upon the successor Trustee's acceptance of the appointment as provided in the JCI plc Indenture.

The Trustee and its Affiliates have engaged, currently are engaged, and may in the future engage in financial or other transactions with JCI plc and our Affiliates in the ordinary course of their respective businesses.

Payment and Paying Agents

JCI plc will pay the principal of, premium, if any, and interest on the JCI plc Notes at any office of ours or any agency designated by us.

The Trustee was appointed by JCI plc as paying agent with regard to the JCI plc Dollar Notes. The location of the corporate trust office of the Trustee for payment on the JCI plc Dollar Notes is U.S. Bank Global Corporate Trust Services, Attn: Payments, EP-MN-WS2N, 111 Fillmore Ave E, St. Paul, MN 55107-1402.

The paying agent for the JCI plc Euro Notes is Elavon Financial Services DAC, UK Branch. For so long as the JCI plc Euro Notes are in global form, payment of principal and interest on, and any other amount due in respect of, the JCI plc Euro Notes will be made by or to the order of the paying agent on behalf of the common depositary or its nominee as the registered holder thereof. After payment by JCI plc or the paying agent of interest, principal or other amounts in respect of the JCI plc Euro Notes to the common depositary (or its nominee), JCI plc will not have responsibility or liability for such amounts to Euroclear or Clearstream, or to holders or beneficial owners of book-entry interests in the JCI plc Euro Notes.

In addition JCI plc will maintain a transfer agent and a security registrar for the JCI plc Notes. The transfer agent and security registrar for the JCI plc Notes other than the 1.00% Senior Notes due 2023 and 4.500% Senior Notes Due 2047 is Elavon Financial Services DAC. The transfer agent and security registrar for the 1.00% Senior Notes due 2023 and 4.500% Senior Notes Due 2047 is the Trustee.

The security registrar as to any series of JCI plc Notes will maintain a register reflecting ownership of the JCI plc Notes of such series outstanding from time to time, if any, and together with the applicable transfer agent, will make payments on and facilitate transfers of the JCI plc Notes of such series on behalf of JCI plc. No service charge will be made for any registration of transfer or exchange of JCI plc Notes. However, we may require holders to pay any transfer taxes or other similar governmental charges payable in connection with any such transfer or exchange.

JCI plc may change or appoint any paying agent, security registrar or transfer agent with respect to the JCI plc Notes of a series without prior notice to the holders of the JCI plc Notes of such series. JCI plc or any of its subsidiaries may act as paying agent, transfer agent or security registrar in respect of any JCI plc Notes.

Governing Law

The JCI plc Indenture and any JCI plc Notes issued thereunder shall be deemed to be a contract made under the internal laws of the State of New York, and for all purposes shall be construed in accordance with the laws of the State of New York without regard to conflicts of laws principles that would require the application of any other law. The JCI plc Indenture is subject to the provisions of the Trust Indenture Act that are required to be part of the JCI plc Indenture and shall, to the extent applicable, be governed by such provisions.

Satisfaction and Discharge of the JCI plc Indenture

The JCI plc Indenture shall cease to be of further effect with respect to a series of JCI plc Notes if, at any time:

(a) JCI plc has delivered or has caused to be delivered to the Trustee for cancellation all JCI plc Notes of such series theretofore authenticated, other than any JCI plc Notes that have been destroyed, lost or stolen and that have been replaced or paid as provided in the JCI plc Indenture, and JCI plc Notes for whose payment funds or governmental obligations have theretofore been deposited in trust or segregated and held in trust by JCI plc and thereupon repaid to JCI plc or discharged from such trust, as provided in the JCI plc Indenture; or

(b) all such JCI plc Notes of a particular series not theretofore delivered to the Trustee for cancellation have become due and payable or are by their terms to become due and payable within one year or are to be called for redemption within one year under arrangements satisfactory to the Trustee for the giving of notice of redemption, and JCI plc shall irrevocably deposit or cause to be deposited with the Trustee as trust funds the entire amount, in funds or governmental obligations, or a combination thereof, sufficient to pay at maturity or upon redemption all JCI plc Notes of such series not theretofore delivered to the Trustee for cancellation, including principal, premium, if any, and interest due or to become due on such date of maturity or redemption date, as the case may be, and if in either case JCI plc shall also pay or cause to be paid all other sums payable under the JCI plc Indenture with respect to such series by JCI plc.

With respect to any redemption of any JCI plc Notes that requires the payment of any premium, the amount deposited pursuant to the above paragraph shall be sufficient for purposes of the JCI plc Indenture to the extent that an amount is so deposited with the Trustee or paying agent, as applicable, equal to t such premium, on such JCI plc Notes calculated as of the date of the notice of redemption, with any deficit on the redemption date only required to be deposited with the Trustee or paying agent, as applicable, on or prior to the redemption date.

Notwithstanding the above, JCI plc may not be discharged from the following obligations, which will survive until the date of maturity or the redemption date, as the case may be, for the applicable series of JCI plc Notes:

- to make any interest or principal payments that may be required with respect to the JCI plc Notes of such series;
- to register the transfer or exchange of the JCI plc Notes of such series;
- to execute and authenticate the JCI plc Notes of such series;
- to replace stolen, lost or mutilated JCI plc Notes of such series;
- to maintain an office or agency with respect to the JCI plc Notes of such series;
- to maintain paying agencies with respect to the JCI plc Notes of such series; and
- to appoint new Trustees with respect to the JCI plc Notes of such series as required by the Indenture.

JCI plc also may not be discharged from the following obligations, which will survive the satisfaction and discharge of the applicable series of JCI plc Notes:

- to compensate and reimburse the Trustee in accordance with the terms of the JCI plc Indenture;
- to receive unclaimed payments held by the Trustee for at least one year after the date upon which the principal, if any, or interest on the JCI plc Notes of such series shall have respectively come due and payable and remit those payments to the holders thereof if required; and
- to withhold or deduct taxes as provided in the JCI plc Indenture.

For purposes of this "*Description of JCI plc Notes*," the term "*governmental obligations*" shall have the following meaning with respect to the JCI plc Euro Notes: (x) any security which is (i) a direct obligation of the German government or (ii) an obligation of a Person controlled or supervised by and acting as an agency or instrumentality of the German government the payment of which is fully and unconditionally guaranteed by the German government, the central bank of the German government or a governmental agency of the German government, which, in either case (x)(i) or (ii), is not callable or redeemable at the option of the issuer thereof, and (y) certificates, depositary receipts or other instruments which evidence a direct ownership interest in obligations described in clause (x)(i) or (x)(ii) above or in any specific principal or interest payments due in respect thereof.

Defeasance and Discharge of Obligations

JCI plc's obligations with respect to the JCI plc Notes of any series will be discharged upon compliance with the conditions under the caption "*Covenant Defeasance*"; provided that JCI plc may not be discharged from the following obligations, which will survive until such date of maturity or the redemption date, as the case may be, for the applicable series of JCI plc Notes:

- to make any interest or principal payments that may be required with respect to the JCI plc Notes of such series;
- to register the transfer or exchange of the JCI plc Notes of such series;
- to execute and authenticate the JCI plc Notes of such series;
- to replace stolen, lost or mutilated JCI plc Notes of such series;
- to maintain an office or agency with respect to the JCI plc Notes of such series;
- to maintain paying agencies with respect to the JCI plc Notes of such series; and

- to appoint new Trustees with respect to the JCI plc Notes of such series as required by the Indenture.

JCI plc also may not be discharged from the following obligations, which will survive the satisfaction and discharge of the applicable series of JCI plc Notes:

- to compensate and reimburse the Trustee in accordance with the terms of the JCI plc Indenture;
- to receive unclaimed payments held by the Trustee for at least one year after the date upon which the principal, if any, or interest on the JCI plc Notes of such series shall have respectively come due and payable and remit those payments to the holders thereof if required; and
- to withhold or deduct taxes as provided in the JCI plc Indenture.

Covenant Defeasance

Upon compliance with specified conditions, JCI plc, at its option and at any time, by written notice executed by an Officer delivered to the Trustee, may elect to have its obligations, to the extent applicable, under the covenants described under "*—Offer to Repurchase Upon Change of Control Triggering Event*" and "*—Certain Covenants*" above, and the operation of the Event of Default described in clause (4) of the first paragraph under the caption "*—Events of Default*" above, discharged with respect to all outstanding JCI plc Notes of a series and the JCI plc Indenture insofar as such JCI plc Notes are concerned. For this purpose, such covenant defeasance means that, with respect to the outstanding JCI plc Notes of a series, JCI plc may omit to comply with and shall have no liability in respect of any term, condition or limitation set forth in any such covenant, whether directly or indirectly, by reason of any reference in the JCI plc Indenture to any such covenant or by reason of reference in any such covenant to any other provision of the JCI plc Indenture or in any other document, and such omission to comply shall not constitute a Default or an Event of Default relating to the applicable series of JCI plc Notes. These conditions are:

- JCI plc irrevocably deposits in trust with the Trustee or, at the option of the Trustee, with a trustee satisfactory to the Trustee and JCI plc, as the case may be, under the terms of an irrevocable trust agreement in form and substance satisfactory to the Trustee, funds or governmental obligations or a combination thereof sufficient, in the opinion of a nationally recognized firm of independent public accountants expressed in a written certification thereof delivered to the Trustee, to pay principal of, premium, if any, and interest on the outstanding JCI plc Notes of such series to maturity or redemption, as the case may be, and to pay all other amounts payable by it under the JCI plc Indenture (provided that, with respect to any redemption of any JCI plc Notes that requires the payment of any premium, the amount deposited pursuant to the above paragraph shall be sufficient for purposes of the JCI plc Indenture to the extent that an amount is so deposited with the Trustee or paying agent, as applicable, equal to the such premium on such JCI plc Notes calculated as of the date of the notice of redemption, with any deficit on the redemption date only required to be deposited with the Trustee or paying agent, as applicable, on or prior to the redemption date), provided that (A) the trustee of the irrevocable trust shall have been irrevocably instructed to pay such funds or the proceeds of such governmental obligations to the Trustee and (B) the Trustee shall have been irrevocably instructed to apply such funds or the proceeds of such governmental obligations to the payment of such principal, premium, if any, and interest with respect to the JCI plc Notes of such series;
- JCI plc delivers to the Trustee an Officer's Certificate stating that all conditions precedent specified herein relating to defeasance or covenant defeasance, as the case may be, have been complied with, and an Opinion of Counsel to the same effect;
- no Event of Default shall have occurred and be continuing, and no event which with notice or lapse of time or both would become such an Event of Default shall have occurred and be continuing, on the date of such deposit; and
- JCI plc shall have delivered to the Trustee an Opinion of Counsel (which, in the case of a defeasance, must be based on a change in law) or a ruling received from the U.S. Internal Revenue Service to the effect that the beneficial owners of the JCI plc Notes of such series will not recognize income, gain or loss for U.S. federal income tax purposes as a result of JCI plc's exercise of such defeasance or covenant defeasance and will be subject to U.S. Federal income tax in the same amount and in the same manner and at the same times as would have been the case if such election had not been exercised.

Definitions

As used in the JCI plc Notes and this "*Description of JCI plc Notes*," the following defined terms shall have the following meanings with respect to the JCI plc Notes:

"*Affiliate*", with respect to any specified Person, means any other Person directly or indirectly controlling or controlled by or under direct or indirect common control with such specified Person. For the purposes of this definition, "*control*" when used with respect to any specified Person means the power to direct the management and policies of such Person, directly or indirectly, whether through ownership of voting securities, by contract or otherwise; and the terms "*controlling*" and "*controlled*" have meanings correlative to the foregoing.

"*Attributable Debt*," in connection with a Sale and Lease-Back Transaction, as of any particular time, means the aggregate of present values (discounted at a rate that, at the inception of the lease, represents the effective interest rate that the lessee would have incurred to borrow over a similar term the funds necessary to purchase the leased assets) of the obligations of JCI plc or any Restricted Subsidiary for net rental payments during the remaining term of the applicable lease, including any period for which such lease has been extended or, at the option of the lessor, may be extended. The term "*net rental payments*" under any lease of any period shall mean the sum of the rental and other payments required to be paid in such period by the lessee thereunder, not including any amounts required to be paid by such lessee, whether or not designated as rental or additional rental, on account of maintenance and repairs, reconstruction, insurance, taxes, assessments, water rates or similar charges required to be paid by such lessee thereunder or any amounts required to be paid by such lessee thereunder contingent upon the amount of sales, maintenance and repairs, reconstruction, insurance, taxes, assessments, water rates or similar charges.

"*Board of Directors*" means the Board of Directors of JCI plc or any duly authorized committee of such Board of Directors.

"*business day*" means any day other than a Saturday or Sunday, (1) that is not a day on which banking institutions in the City of New York or London are authorized or obligated by law, executive order or regulation to close, and (2) in respect of the JCI plc Euro Notes, on which the Trans-European Automated Real-time Gross Settlement Express Transfer System (the TARGET2 system), or any successor thereto, is open.

"*Change of Control*" means the occurrence of any of the following after the date of issuance of the JCI plc Notes of the applicable series:

(1) the direct or indirect sale, lease, transfer, conveyance or other disposition (other than by way of merger or consolidation), in one or a series of related transactions, of all or substantially all of our assets and the assets of our subsidiaries taken as a whole to any "person" or "group" (as those terms are used in Section 13(d)(3) of the Exchange Act) other than to us or one of our subsidiaries, other than any such transaction or series of related transactions where holders of our Voting Stock outstanding immediately prior thereto hold Voting Stock of the transferee Person representing a majority of the voting power of the transferee Person's Voting Stock immediately after giving effect thereto;

(2) the consummation of any transaction (including, without limitation, any merger or consolidation) the result of which is that any "person" or "group" (as those terms are used in Section 13(d)(3) of the Exchange Act) (other than us or one of our subsidiaries) becomes the "beneficial owner" (as defined in Rules 13d-3 and 13d-5 under the Exchange Act), directly or indirectly, of our Voting Stock representing a majority of the voting power of our outstanding Voting Stock;

(3) we consolidate with, or merge with or into, any Person, or any Person consolidates with, or merges with or into, us, in any such event pursuant to a transaction in which any of our outstanding Voting Stock or Voting Stock of such other Person is converted into or exchanged for cash, securities or other property, other than any such transaction where our Voting Stock outstanding immediately prior to such transaction constitutes, or is converted into or exchanged for, Voting Stock representing a majority of the voting power of the Voting Stock of the surviving Person (or its parent) immediately after giving effect to such transaction; or

(4) the adoption by our shareholders of a plan relating to our liquidation or dissolution.

Notwithstanding the foregoing, a transaction will not be deemed to involve a change of control under clause (2) above if (1) we become a direct or indirect wholly-owned subsidiary of a holding company or other Person and (2)(A) the direct or indirect holders of the Voting Stock of such holding company or other Person immediately following that transaction are substantially the same as the holders of our Voting Stock immediately prior to that transaction or (B) immediately following that transaction no person (as that term is used in Section 13(d)(3) of the Exchange Act) (other than a holding company or other Person satisfying the requirements of this sentence) is the beneficial owner, directly or indirectly, of more than 50% of the Voting Stock of such holding company or other Person.

"*Change of Control Triggering Event*" means, with respect to the applicable series of JCI plc Notes, the JCI plc Notes of such series cease to be rated Investment Grade by each of the Rating Agencies on any date during the period (the "*Trigger Period*") commencing 60 days prior to the first public announcement by us of any Change of Control (or pending Change of Control) and ending 60 days following consummation of such Change of Control (which Trigger Period will be extended following consummation of a Change of Control for so long as any of the Rating Agencies has publicly announced that it is considering a possible ratings downgrade or withdrawal). However, a Change of Control Triggering Event otherwise arising by virtue of a particular reduction in, or withdrawal of, rating shall not be deemed to have occurred in respect of a particular Change of Control (and thus shall not be deemed a Change of Control Triggering Event for purposes of the definition of Change of Control Triggering Event) if the Rating Agencies making the reduction in, or withdrawal of, rating to which this definition would otherwise apply do not announce or publicly confirm or inform the Trustee in writing at our request that the reduction or withdrawal was the result, in whole or in part, of any event or circumstance comprised of or arising as a result of, or in respect of, the applicable Change of Control (whether or not the applicable Change of Control shall have occurred at the time of the Change of Control Triggering Event). If a Rating Agency is not providing a rating for the JCI plc Notes of such series at the commencement of any Trigger Period, the JCI plc Notes of such series will be deemed to have ceased to be rated Investment Grade by such Rating Agency during that Trigger Period.

Notwithstanding the foregoing, no Change of Control Triggering Event will be deemed to have occurred in connection with any particular Change of Control unless and until such Change of Control has actually been consummated.

"*Consolidated Net Worth*" at any date means total assets less total liabilities, in each case appearing on the most recently prepared consolidated balance sheet of JCI plc and its subsidiaries as of the end of a fiscal quarter of JCI plc, prepared in accordance with United States generally accepted accounting principles as in effect on the date of the consolidated balance sheet.

"*Consolidated Tangible Assets*" at any date means total assets less all intangible assets appearing on the most recently prepared consolidated balance sheet of JCI plc and its subsidiaries as of the end of a fiscal quarter of JCI plc, prepared in accordance with United States generally accepted accounting principles as in effect on the date of the consolidated balance sheet.

"*Default*" means any event, act or condition that with notice or lapse of time, or both, would constitute an Event of Default.

"*Funded Indebtedness*" means any Indebtedness of JCI plc or any consolidated subsidiary maturing by its terms more than one year from the date of the determination thereof, including any Indebtedness renewable or extendable at the option of the obligor to a date later than one year from the date of the determination thereof.

"*Indebtedness*" means, without duplication, the principal amount (such amount being the face amount or, with respect to original issue discount bonds or zero coupon notes, bonds or debentures or similar securities, determined based on the accreted amount as of the date of the most recently prepared consolidated balance sheet of JCI plc and its subsidiaries as of the end of a fiscal quarter of JCI plc prepared in accordance with United States generally accepted accounting principles as in effect on the date of such consolidated balance sheet) of (i) all obligations for borrowed money, (ii) all obligations evidenced by debentures, notes or other similar instruments, (iii) all obligations in respect of letters of credit or bankers acceptances or similar instruments or reimbursement obligations with respect thereto (such instruments to constitute Indebtedness only to the extent that the outstanding reimbursement obligations in respect thereof are collateralized by cash or cash equivalents reflected as assets on a balance sheet prepared in accordance with United States generally accepted accounting principles), (iv) all obligations to pay the deferred purchase price of property or services, except (A) trade and similar accounts payable and accrued expenses, (B) employee compensation, deferred compensation and pension obligations, and other obligations arising from employee benefit programs and agreements or other similar employment arrangements, (C) obligations in respect of customer advances received and (D) obligations in connection with earnout and holdback agreements, in each case in the ordinary course of business, (v) all obligations as lessee to the extent capitalized in accordance with United States generally accepted accounting principles and (vi) all Indebtedness of others consolidated in such balance sheet that is guaranteed by JCI plc or any of its subsidiaries or for which JCI plc or any of its subsidiaries is legally responsible or liable (whether by agreement to purchase indebtedness of, or to supply funds or to invest in, others).

"*Intangible assets*" means the amount, if any, stated under the headings "Goodwill" and "Other intangible assets, net" or under any other heading of intangible assets separately listed, in each case on the face of the most recently prepared consolidated balance sheet of JCI plc and its subsidiaries as of the end of a fiscal quarter of JCI plc, prepared in accordance with United States generally accepted accounting principles as in effect on the date of the consolidated balance sheet.

"*Investment Grade*" means a rating of Baa3 or better by Moody's (or its equivalent under any successor rating category of Moody's) and a rating of BBB– or better by S&P (or its equivalent under any successor rating category of S&P), and the equivalent investment grade credit rating from any replacement rating agency or rating agencies selected by us under the circumstances permitting us to select a replacement rating agency and in the manner for selecting a replacement rating agency, in each case as set forth in the definition of "*Rating Agency*."

"*lien*" means a mortgage, pledge, security interest, lien or encumbrance.

"*Moody's*" means Moody's Investors Service, Inc., a subsidiary of Moody's Corporation, and its successors.

"*Officer*" means any director, any managing director, the chairman or any vice chairman of the Board of Directors, the chief executive officer, the president, the chief financial officer, any vice president, the treasurer, any assistant treasurer, the secretary or any assistant secretary, or any equivalent of the foregoing, of JCI plc or any Person duly authorized to act for or on behalf of JCI plc.

"*Officer's Certificate*" means a certificate, signed by any Officer of JCI plc, that is delivered to the Trustee in accordance with the terms of the JCI plc Indenture.

"*Opinion of Counsel*" means a written opinion acceptable to the Trustee from legal counsel licensed in any State of the United States of America and applying the laws of such State. The counsel may be an employee of or counsel to JCI plc.

"*Person*" means any individual, corporation, partnership, limited liability company, business trust, association, joint-stock company, joint venture, trust, incorporated or unincorporated organization or government or any agency or political subdivision thereof.

"*Principal Property*" means any manufacturing, processing or assembly plant or any warehouse or distribution facility, or any office or parcel of real property (including fixtures but excluding leases and other contract rights which might otherwise be deemed real property) of JCI plc or any of its subsidiaries that is used by any U.S. Subsidiary of JCI plc and is located in the United States of America (excluding its territories and possessions and Puerto Rico) and (A) is owned by JCI plc or any subsidiary of JCI plc on the date the JCI plc Notes of the applicable series are issued, (B) the initial construction of which has been completed after the date on which the JCI plc Notes of the applicable series are issued, or (C) is acquired after the date on which the JCI plc Notes of the applicable series are issued, in each case, other than any such plants, facilities, warehouses or portions thereof, that in the opinion of the Board of Directors of JCI plc, are not collectively of material importance to the total business conducted by JCI plc and its subsidiaries as an entirety, or that have a net book value (excluding any capitalized interest expense), on the date the JCI plc Notes of the applicable series are issued in the case of clause (A) of this definition, on the date of completion of the initial construction in the case of clause (B) of this definition or on the date of acquisition in the case of clause (C) of this definition, of less than 2.0% of Consolidated Tangible Assets on the consolidated balance sheet of JCI plc and its subsidiaries as of the applicable date.

"*Rating Agency*" means each of Moody's and S&P; provided, that if any of Moody's or S&P ceases to provide rating services to issuers or investors, we may appoint another "nationally recognized statistical rating organization" as defined under Section 3(a)(62) of the Exchange Act as a replacement for such Rating Agency; provided, that we shall give notice of such appointment to the Trustee.

"*Restricted Subsidiary*" means any subsidiary of JCI plc that owns or leases a Principal Property.

"*Sale and Lease-Back Transaction*" means an arrangement with any Person providing for the leasing by JCI plc or a Restricted Subsidiary of any Principal Property whereby such Principal Property has been or is to be sold or transferred by JCI plc or a Restricted Subsidiary to such Person other than JCI plc or any of its subsidiaries; provided, however, that the foregoing shall not apply to any such arrangement involving a lease for a term, including renewal rights, for not more than three years.

"S&P" means Standard & Poor's Global Ratings, a division of S&P Global Inc., and its successors.

"*Trust Officer*" means any officer within the corporate trust department of the Trustee, including any vice president, senior associate, associate, trust officer or any other officer of the Trustee who customarily performs functions similar to those performed by the Persons who at the time shall be such officers, respectively, or to whom any corporate trust matter is referred because of such Person's knowledge of and familiarity with the particular subject and who shall have direct responsibility for the administration of the JCI plc Indenture.

"*U.S. Subsidiary*" means any subsidiary of JCI plc that was formed under the laws of the United States of America, any State thereof or the District of Columbia (but not any territory thereof).

"*Voting Stock*" of any specified Person as of any date means the capital stock of such Person that is at the time entitled to vote generally in the election of the board of directors of such Person.

Exhibit 4.12

DESCRIPTION OF JCI PLC AND TFSCA NOTES

Capitalized terms used in this "*Description of JCI plc and TFSCA Notes*" and not otherwise defined have the meanings set forth under the heading "—*Definitions*" below. For purposes of this "*Description of the JCI plc and TFSCA Notes*" section, (a) the terms "*JCI plc*" or "*Company*" refer only to Johnson Controls International plc, a public limited company organized under the laws of Ireland, and its successors permitted by the terms of the Indenture, (b) the terms "*TFSCA*" or "*Co-Issuer*" refer to Tyco Fire & Security Finance S.C.A., a corporate partnership limited by shares incorporated and organized under the laws of the Grand Duchy of Luxembourg, and its successors permitted by the terms of the Indenture, (c) the terms "*Issuers,*" "*we*," "*us*" and "*our*" refer to JCI plc and TFSCA together, and (d) the term "*Johnson Controls*" refers to JCI plc and its consolidated subsidiaries, including TFSCA.

For purposes of this description:

- "*2027 Notes*" refers to our 0.375% Senior Notes due 2027
- "*2028 Notes*" refers to our 3.000% Senior Notes due 2028
- "*2030 Notes*" refers to our 1.750% Senior Notes due 2030
- "2031 Notes" refers to our 2.000% Sustainability-Linked Senior Notes due 2031
- "*2032 USD Notes*" refers to our 4.900% Senior Notes due 2032
- "*2032 Euro Notes*" refers to our 1.000% Senior Notes due 2032
- "*Euro Notes*" refers to the 2027 Notes, the 2028 Notes and the 2032 Euro Notes
- "*USD Notes*" refers to the 2030 Notes, the 2031 Notes and the 2032 USD Notes
- "*Notes*" refers to the Euro Notes and the USD Notes.

The 2030 Notes were issued under the Indenture, dated as of December 28, 2016 (the "*Base Indenture*"), between JCI plc and U.S. Bank Trust Company, National Association (successor in interest to U.S. Bank National Association), as trustee (the "Trustee") and a Fifth Supplemental Indenture among JCI plc, TFSCA and the Trustee. The 2027 Notes and the 2032 Euro Notes were issued under the Base Indenture and a Sixth Supplemental Indenture among JCI plc, TFSCA, the Trustee and Elavon Financial Services DAC, as paying agent. The 2031 Notes were issued under the Base Indenture and a Seventh Supplemental Indenture among JCI plc, TFSCA and the Trustee. The 2028 Notes were issued under the Base Indenture and an Eighth Supplemental Indenture among JCI plc, TFSCA, the Trustee and Elavon Financial Services DAC, as paying agent. The 2032 USD Notes were issued under the Base Indenture and a Ninth Supplemental Indenture among JCI plc, TFSCA and the Trustee (together with the Base Indenture, the Fifth Supplemental Indenture , the Sixth Supplemental Indenture, the Seventh Supplemental Indenture and the Eighth Supplemental Indenture, the "*Indenture*"). We entered into agency agreements with respect to the Euro Notes among us, Elavon Financial Services DAC, as paying agent, and U.S. Bank Trust Company, National Association (successor in interest to U.S. Bank National Association), as transfer agent, security registrar and Trustee.

The terms of the Notes include those expressly set forth in such Notes and the Indenture and those made part of the Indenture by reference to the Trust Indenture Act of 1939 (15 U.S.C. §§77aaa-77bbbb), as in effect from time to time (the "*Trust Indenture Act*").

The 2027 Notes and the 2032 Euro Notes were each issued in an aggregate initial principal amount of €500,000,000. The 2028 Notes were issued in an aggregate initial principal amount of €600,000,000. The 2030

Notes were issued in an aggregate initial principal amount of $625,000,000. The 2031 Notes were issued in an aggregate principal amount of $500,000,000. The 2032 USD Notes were issued in an aggregate initial principal amount of $400,000,000.

The Issuers are jointly and severally liable for all obligations under the Notes. The Co-Issuer is a wholly-owned consolidated subsidiary of the Company that is 99.924% owned directly by the Company and 0.076% owned by TFSCA's sole general partner and manager, Tyco Fire & Security S.à.r.l., which is itself wholly owned by the Company. The Co-Issuer is a holding company that directly and indirectly holds significantly all of the subsidiaries of JCI plc. The Co-Issuer engages in intercompany financial services on behalf of JCI plc, including engaging in intercompany loan transactions and engaging in currency hedging transactions on behalf of JCI plc and its subsidiaries.

This description is a summary of the material provisions of the Notes and the Indenture. This description does not restate those agreements and instruments in their entirety. We urge you to read the Notes and the Indenture, which are filed as exhibits to this Annual Report on Form 10-K, because they, not the summaries below, define the rights of holders of the Notes.

General

The Notes constitute separate series and are JCI plc's and the Co-Issuer's unsecured, unsubordinated obligations. The Notes rank senior in right of payment to JCI plc's and the Co-Issuer's existing and future indebtedness and other obligations that are expressly subordinated in right of payment to the Notes; equal in right of payment to JCI plc's and the Co-Issuer's existing and future indebtedness and other obligations that are not so subordinated; effectively junior to any of JCI plc's and the Co-Issuer's secured indebtedness and other obligations to the extent of the value of the assets securing such indebtedness or other obligations; and structurally junior to all existing and future indebtedness and other obligations incurred by JCI plc's and the Co-Issuer's subsidiaries. TFSCA is not a co-issuer in respect of JCI plc's outstanding senior notes other than the Notes described herein.

The Euro Notes were issued in book-entry form, represented by Global Securities (as defined below), deposited with or on behalf of a common depositary on behalf of Clearstream and Euroclear and registered in the name of the nominee of the common depositary for the accounts of Clearstream and Euroclear. The USD Notes were issued in book-entry form, represented by Global Securities and delivered through the facilities of DTC.

The Euro Notes were issued in registered form without interest coupons and only in denominations of €100,000 and whole multiples of €1,000 in excess thereof. The USD Notes were issued in registered form without interest coupons and only in denominations of $2,000 and whole multiples of $1,000 in excess thereof.

Except as provided below, the Notes are not subject to redemption, repurchase or repayment at the option of any holder thereof, upon the occurrence of any particular circumstance or otherwise. The Notes do not have the benefit of any sinking fund. The Notes are not be convertible into or exchangeable for shares or other securities of the Issuers.

For the avoidance of doubt, articles 470-1 to 470-19 of the Luxembourg law of 10 August 1915 relating to commercial companies, as amended, do not apply to the Notes.

Maturity and Interest

Euro Notes

The 2027 Notes mature on September 15, 2027 and bear interest at a rate of 0.375% per annum. The 2028 Notes mature on September 15, 2028 and bear interest at a rate of 3.000% per annum. The 2032 Euro Notes mature on September 15, 2032 and bear interest at a rate of 1.000% per annum. The date from which interest accrued on the 2027 Notes and 2032 Euro Notes was September 15, 2020. The date from which interest accrued on the 2028 Notes was September 7, 2022. Interest in respect of the Euro Notes is payable annually in arrears on September 15 of each year, beginning on September 15, 2021 (with respect to the 2027 Notes and the 2032 Euro Notes) and September 15, 2023 (with respect to the 2028 Notes), to the applicable holders of record at the close of business on the September 1 next preceding such interest payment date. The basis upon which interest shall be calculated is the actual number of days in the period for which interest is being calculated and the actual number of days from and including the last date on which interest was paid on such series of Euro Notes, to but excluding the next scheduled interest payment date. This payment convention is referred to as "*ACTUAL/ACTUAL (ICMA)*," as defined in the statutes, by-laws, rules and recommendations published by the International Capital Markets Association (the "*ICMA Rulebook*").

2030 Notes and 2032 USD Notes

The 2030 Notes mature on September 15, 2030 and bear interest at a rate of 1.750% per annum. The 2032 USD Notes mature on December 1, 2032 and bear interest at a rate of 4.900% per annum. The date from which interest accrued on the 2030 Notes was September 11, 2020. The date from which interest accrued on the 2032 USD Notes was September 14, 2022. Interest in respect of the 2030 Notes is payable semi-annually in arrears on March 15 and September 15 of each year, beginning on March 15, 2021, to the applicable holders of record at the close of business on the March 1 and September 1 next preceding such interest payment date. Interest in respect of the 2032 USD Notes is payable semi-annually in arrears on June 1 and December 1 of each year, beginning on December 1, 2022, to the applicable holders of record at the close of business on the May 15 and November 15 next preceding such interest payment date. Interest is computed on the basis of a 360-day year comprised of twelve 30-day months.

2031 Notes

The rate of interest payable on the 2031 Notes may be subject to adjustment as described below.

The 2031 Notes will mature on September 16, 2031 and bear interest at a rate of 2.000% per annum (the "Initial Interest Rate"), subject to adjustment as described in the paragraph immediately below. The date from which interest accrued on the 2031 Notes was September 16, 2021. Interest in respect of the 2031 Notes is payable semi-annually in arrears on March 16 and September 16 of each year, beginning on March 16, 2022, to the applicable holders of record at the close of business on the March 2 and September 2 next preceding such interest payment date. Interest is computed on the basis of a 360-day year comprised of twelve 30-day months.

From and including March 16, 2026 (or if such day is not a business day, the next succeeding business day) (the "Interest Rate Step Up Date"), the interest rate payable on the 2031 Notes shall be increased from the Initial Interest Rate by, in aggregate, (i) an additional 12.5 basis points per annum unless the Issuers have notified the Trustee in writing on or before the date that is 15 days prior to the Interest Rate Step Up Date (the "Notification Date") in the form of an Officer's Certificate (the "Scope 1 and Scope 2 Emissions Satisfaction Notification") certifying that such officers have determined that the Issuers have satisfied the Scope 1 and Scope 2 Emissions Sustainability Performance Target and received a related assurance letter from the External Verifier (an "Assurance Letter") and (ii) an additional 12.5 basis points per annum unless the Issuers have notified the Trustee in writing on or before the Notification Date in the form of an Officer's Certificate (the "Scope 3 Emissions Satisfaction Notification") certifying that such officers have determined that the Issuers have satisfied the Scope 3 Emissions Sustainability Performance Target and received a related Assurance Letter from the External Verifier. For the avoidance of doubt, if the Issuers have provided the Trustee with the applicable Scope 1 and Scope 2 Emissions Satisfaction Notification or Scope 3 Emissions Satisfaction Notification for each of the two Sustainability Performance Targets on or prior to the Notification Date, then the interest rate payable on the 2031 Notes shall not increase from the Initial Interest Rate pursuant to this paragraph.

The interest rate applicable to the 2031 Notes will only be adjusted on the Notification Date based upon the satisfaction or non-satisfaction of a Sustainability Performance Target on or prior to the Notification Date. Any satisfaction of a Sustainability Performance Target subsequent to the Notification Date or cessation of satisfaction, or any failure to satisfy a Sustainability Performance Target subsequent to the Notification Date will not result in an adjustment to the interest rate payable on the 2031 Notes.

Certain definitions with respect to the 2031 Notes:

"External Verifier" means one or more qualified independent public accountants or environmental consultants (solely with respect to verifying the Scope 1 and Scope 2 Emissions Sustainability Performance Target and the Scope 3 Emissions Sustainability Performance Target) of recognized national standing designated from time to time by the Issuers to provide limited assurance on Johnson Controls' Scope 1 and Scope 2 Emissions and/or Scope 3 Emissions.

"GHG Emissions Performance Reference Period" means the fiscal year of JCI plc ending September 30, 2025.

"GHG Protocol" means the second (2nd) revised edition of the GHG Protocol Corporate Accounting and Reporting Standard of the World Business Council for Sustainable Development and World Resources Institute available at https://ghgprotocol.org/sites/default/files/standards/ghg-protocolrevised.pdf. The information contained on or accessible through this website does not constitute a part of this exhibit and is not incorporated by reference herein. In the event an updated version of the GHG Protocol is published, the Issuers may elect at their option to apply such revised version for the purposes of calculating Scope 1 Emission, Scope 2 Emissions and Scope 3 Emissions.

"Scope 1 and Scope 2 Emissions" means for any period, the total aggregate amount of Scope 1 Emissions and Scope 2 Emissions for such period.

"Scope 1 and Scope 2 Emissions Sustainability Performance Target" means a reduction of Scope 1 and Scope 2 Emissions of 35% during the GHG Emissions Performance Reference Period relative to the Scope 1 and Scope 2 Emissions for JCI plc's fiscal year 2017, provided that if the Issuers subsequently issue sustainability-linked notes linked to the same Scope 1 and Scope 2 Emissions Sustainability Performance metric and the same SPT Observation Date, but with a higher reduction target, the Scope 1 and Scope 2 Emissions Sustainability Performance Target shall be automatically adjusted upward to equal the Scope 1 and Scope 2 Emissions reduction percentage required by such subsequent sustainability-linked notes.

"Scope 1 Emissions" means, for any period, direct greenhouse gas emissions or equivalent CO_2 emissions attributable to sources that are controlled by Johnson Controls in the operation of its business, which are determined by Johnson Controls in good faith in accordance with the GHG Protocol.

"Scope 2 Emissions" means, for any period, indirect greenhouse gas emissions or equivalent CO_2 emissions occurring from the generation of purchased and imported energy (including electricity and steam) consumed by Johnson Controls in the operation of its business, which are determined by Johnson Controls in good faith in accordance with the GHG Protocol.

"Scope 3 Emissions" means, for any period, indirect greenhouse gas emissions or equivalent CO_2 emissions arising from customers' downstream use of products sold by Johnson Controls, which are determined by Johnson Controls in good faith in accordance with the GHG Protocol.

"Scope 3 Emissions Sustainability Performance Target" means a reduction of Scope 3 Emissions of 5% during the GHG Emissions Performance Reference Period relative to the Scope 3 Emissions for JCI plc's fiscal year 2017, provided that if the Issuers subsequently issue sustainability-linked notes linked to the same Scope 3 Emissions Sustainability Performance metric and the same SPT Observation Date, but with a higher reduction target, the Scope 3 Emissions Sustainability Performance Target shall be automatically adjusted upward to equal the Scope 3 Emissions reduction percentage required by such subsequent sustainability-linked notes.

"SPT Observation Date" means September 30, 2025.

"Sustainability Performance Targets" means the Scope 1 and Scope 2 Emissions Sustainability Performance Target and the Scope 3 Emissions Sustainability Performance Target.

Indenture May Be Used for Future Issuances

We may, without the consent of the then existing holders of the Notes, "re-open" and issue additional Notes of any series, which additional Notes will have the same terms as such series of Notes except for the issue price, issue date and, under some circumstances, the first interest payment date; provided that, if such additional Notes are not fungible with the existing Notes of such series for U.S. federal income tax purposes, such additional Notes will have a separate CUSIP, ISIN and/or other identifying number, as applicable. Additional Notes issued in this manner will form a single series with the applicable series of Notes.

In addition, the Indenture does not limit the amount of debt securities that can be issued thereunder and provides that debt securities of any series may be issued thereunder up to the aggregate principal amount that we may authorize from time to time. All debt securities issued as a series, including those issued pursuant to any reopening of a series, will vote together as a single class. Debt securities issued pursuant to the Indenture may have terms that differ from those of the Notes, as set forth in Section 2.01 of the Indenture.

Issuance of Notes in Euros

All payments of interest and principal, including payments made upon any redemption or repurchase of the Euro Notes, are payable in euros. If the euro is unavailable to us due to the imposition of exchange controls or other circumstances beyond our control or if the euro is no longer being used by the then member states of the European Monetary Union that have adopted the euro as their currency or for the settlement of transactions by public institutions of or within the international banking community, then all payments in respect of the Euro Notes will be made in U.S. dollars until the euro is again available to us or so used. In such circumstances, the amount payable on any date in euros will be converted into U.S. dollars at the rate mandated by the U.S. Federal Reserve Board as of the close of business on the second business day prior to the relevant payment date or, in the event the U.S. Federal Reserve Board has not mandated a rate of conversion, on the basis of the then most recent U.S. dollar/euro exchange rate available on or prior to the second business day prior to the relevant payment date as determined by the Issuers in their sole discretion. Any payment in respect of the Euro Notes so made in U.S. dollars will not constitute an Event of Default (as defined below) under the Euro Notes or the Indenture. Neither the Trustee nor the paying agent shall have any responsibility for any calculation or conversion in connection with the foregoing.

Optional Redemption

Euro Notes

2027 Notes

Prior to July 15, 2027 (the "*2027 Par Call Date*"), the Issuers may, at their option, redeem the 2027 Notes, in whole at any time or in part from time to time (in €1,000 increments, provided that any remaining principal amount thereof shall be at least the minimum authorized denomination of €100,000), at a redemption price equal to the greater of (i) 100% of the principal amount of the 2027 Notes to be redeemed and (ii) the sum of the present values of the Remaining Scheduled Payments (as defined below) that would be due if the 2027 Notes matured on the 2027 Par Call Date, discounted to the redemption date, on an annual basis (ACTUAL/ACTUAL (ICMA)), at a rate equal to the Treasury Rate (as defined below) plus 20 basis points plus, in either case, accrued and unpaid interest, if any, thereon to, but excluding, the redemption date (subject to the right of holders of record on the relevant record date to receive interest due on the relevant interest payment date).

On or after the 2027 Par Call Date, the Issuers may, at their option, redeem the 2027 Notes, in whole at any time or in part from time to time (in €1,000 increments, provided that any remaining principal amount thereof shall be at least the minimum authorized denomination of €100,000), at a redemption price equal to 100% of the principal amount of the 2027 Notes to be redeemed, plus accrued and unpaid interest, if any, thereon to, but excluding, the redemption date (subject to the right of holders of record on the relevant record date to receive interest due on the relevant interest payment date).

2028 Notes

Prior to July 15, 2028 (the "*2028 Par Call Date*"), the Issuers may, at their option, redeem the 2028 Notes, in whole at any time or in part from time to time (in €1,000 increments, provided that any remaining principal amount thereof shall be at least the minimum authorized denomination of €100,000), at a redemption price equal to the greater of (i) 100% of the principal amount of the 2028 Notes to be redeemed and (ii) the sum of the present values of the Remaining Scheduled Payments (as defined below) that would be due if the 2028 Notes matured on the 2028 Par Call Date, discounted to the redemption date, on an annual basis (ACTUAL/ACTUAL (ICMA)), at a rate equal to the Treasury Rate (as defined below) plus 30 basis points plus, in either case, accrued and unpaid interest, if any, thereon to, but excluding, the redemption date (subject to the right of holders of record on the relevant record date to receive interest due on the relevant interest payment date).

On or after the 2028 Par Call Date, the Issuers may, at their option, redeem the 2028 Notes, in whole at any time or in part from time to time (in €1,000 increments, provided that any remaining principal amount thereof shall be at least the minimum authorized denomination of €100,000), at a redemption price equal to 100% of the principal amount of the 2028 Notes to be redeemed, plus accrued and unpaid interest, if any, thereon to, but excluding, the redemption date (subject to the right of holders of record on the relevant record date to receive interest due on the relevant interest payment date).

2032 Euro Notes

Prior to June 15, 2032 (the "2032 Euro Par Call Date"), the Issuers may, at their option, redeem the 2032 Euro Notes, in whole at any time or in part from time to time (in €1,000 increments, provided that any remaining principal amount thereof shall be at least the minimum authorized denomination of €100,000), at a redemption price equal to the greater of (i) 100% of the principal amount of the 2032 Euro Notes to be redeemed and (ii) the sum of the present values of the Remaining Scheduled Payments (as defined below) that would be due if the 2032 Euro Notes matured on the 2032 Euro Par Call Date, discounted to the redemption date, on an annual basis (ACTUAL/ACTUAL (ICMA)), at a rate equal to the Treasury Rate (as defined below) plus 25 basis points plus, in either case, accrued and unpaid interest, if any, thereon to, but excluding, the redemption date (subject to the right of holders of record on the relevant record date to receive interest due on the relevant interest payment date).

On or after June 15, 2032, the Issuers may, at their option, redeem the 2032 Euro Notes, in whole at any time or in part from time to time (in €1,000 increments, provided that any remaining principal amount thereof shall be at least the minimum authorized denomination of €100,000), at a redemption price equal to 100% of the principal amount of the 2032 Euro Notes to be redeemed, plus accrued and unpaid interest, if any, thereon to, but excluding, the redemption date (subject to the right of holders of record on the relevant record date to receive interest due on the relevant interest payment date).

Certain definitions with respect to the Optional Redemption provisions of the Euro Notes:

"*Treasury Rate*" means the rate per annum (which, solely in the case of the 2027 Notes and 2032 Euro Notes, if less than zero, shall be deemed to be zero) equal to the annual equivalent yield to maturity of the Reference Bond (as defined below), assuming a price for the Reference Bond (expressed as a percentage of its principal amount) equal to the middle market price of the Reference Bond prevailing at 11:00 a.m. (London time) on the third business day preceding such redemption date as determined by us or an independent investment bank appointed by us.

"*Reference Bond*" means, in relation to any Treasury Rate calculation, a German government bond whose maturity is closest to the maturity of the applicable series of Euro Notes, or if we or an independent investment bank appointed by us considers that such similar bond is not in issue, such other German government bond as we or an independent investment bank appointed by us, with the advice of three brokers of, and/or market makers in, German government bonds selected by us or an independent investment bank appointed by us, determine to be appropriate for determining the Treasury Rate.

"*Remaining Scheduled Payments*" means, with respect to each Euro Note to be redeemed, the remaining scheduled payments of principal of and interest on the relevant Note that would be due after the related redemption date but for the redemption. If that redemption date is not an interest payment date with respect to a Euro Note, the amount of the next succeeding scheduled interest payment on the relevant Euro Note will be reduced by the amount of interest accrued on the Euro Note to the redemption date.

USD Notes

2030 Notes

Prior to June 15, 2030 (the "*2030 Par Call Date*"), the Issuers may, at their option, redeem the 2030 Notes, in whole at any time or in part from time to time , at a redemption price equal to the greater of (i) 100% of the principal amount of the 2030 Notes to be redeemed and (ii) as determined by the Quotation Agent and delivered to the Trustee in writing, the sum of the present values of the remaining scheduled payments of principal and interest thereon that would be due if the 2030 Notes matured on the 2030 Par Call Date (exclusive of interest accrued to the redemption date), discounted to the redemption date (assuming a 360-day year consisting of twelve 30-day months) at the Adjusted Redemption Treasury Rate plus 20 basis points, plus, in either case, accrued and unpaid interest, if any, thereon to, but excluding, the redemption date (subject to the right of holders of record on the relevant record date to receive interest due on the relevant interest payment date).

On or after the 2030 Par Call Date, the Issuers may, at their option, redeem the 2030 Notes, in whole at any time or in part from time to time, at a redemption price equal to 100% of the principal amount of the 2030 Notes to be redeemed, plus accrued and unpaid interest, if any, thereon to, but excluding, the redemption date (subject to the right of holders of record on the relevant record date to receive interest due on the relevant interest payment date).

2031 Notes

Prior to June 16, 2031 (the *"2031 Par Call Date"*), the Issuers may, at their option, redeem the 2031 Notes, in whole at any time or in part from time to time , at a redemption price equal to the greater of (i) 100% of the principal amount of the 2031 Notes to be redeemed and (ii) as determined by the Quotation Agent and delivered to the Trustee in writing, the sum of the present values of the remaining scheduled payments of principal and interest thereon that would be due if the 2031 Notes matured on the 2031 Par Call Date (exclusive of interest accrued to the redemption date) (calculated at the Initial Interest Rate until the Interest Rate Step Up Date, at which point, the interest rate shall be deemed to be the interest rate after giving effect to any applicable adjustment described in *"—Maturity and Interest"* above), discounted to the redemption date (assuming a 360-day year consisting of twelve 30-day months) at the Adjusted Redemption Treasury Rate plus 15 basis points, plus, in either case, accrued and unpaid interest, if any, thereon to, but excluding, the redemption date (subject to the right of holders of record on the relevant record date to receive interest due on the relevant interest payment date).

On or after the 2031 Par Call Date, the Issuers may, at their option, redeem the 2031 Notes, in whole at any time or in part from time to time, at a redemption price equal to 100% of the principal amount of the 2031 Notes to be redeemed, plus accrued and unpaid interest, if any, thereon to, but excluding, the redemption date (subject to the right of holders of record on the relevant record date to receive interest due on the relevant interest payment date).

2032 USD Notes

Prior to September 1, 2032 (the "2032 USD Par Call Date"), the Issuers may, at their option, redeem the 2032 USD Notes, in whole at any time or in part from time to time, at a redemption price equal to the greater of (i) 100% of the principal amount of the 2032 USD Notes to be redeemed and (ii) as determined by the Quotation Agent and delivered to the Trustee in writing, the sum of the present values of the remaining scheduled payments of principal and interest thereon that would be due if the 2032 USD Notes matured on the 2032 USD Par Call Date (exclusive of interest accrued to the redemption date), discounted to the redemption date (assuming a 360-day year consisting of twelve 30-day months) at the Adjusted Redemption Treasury Rate plus 30 basis points, plus, in either case, accrued and unpaid interest, if any, thereon to, but excluding, the redemption date (subject to the right of holders of record on the relevant record date to receive interest due on the relevant interest payment date).

On or after the 2032 USD Par Call Date, the Issuers may, at their option, redeem the 2032 USD Notes, in whole at any time or in part from time to time, at a redemption price equal to 100% of the principal amount of the 2032 USD Notes to be redeemed, plus accrued and unpaid interest, if any, thereon to, but excluding, the redemption date (subject to the right of holders of record on the relevant record date to receive interest due on the relevant interest payment date).

Certain definitions with respect to the Optional Redemption provisions of the USD Notes:

"*Adjusted Redemption Treasury Rate*" means, with respect to any redemption date for the USD Notes, the rate equal to the semiannual equivalent yield to maturity or interpolated (on a 30/360 day count basis) yield to maturity of the Comparable Redemption Treasury Issue, assuming a price for the Comparable Redemption Treasury Issue (expressed as a percentage of its principal amount) equal to the Comparable Redemption Treasury Price for such redemption date.

"*Comparable Redemption Treasury Issue*" means the United States Treasury security selected by the Quotation Agent as having a maturity comparable to the remaining term of such series of USD Notes to be redeemed if such series of USD Notes matured on the par call date applicable to such series of USD Notes that would be utilized at the time of selection and in accordance with customary financial practice in pricing new issues of corporate debt securities of comparable maturity to such remaining term of the applicable series of USD Notes.

"*Comparable Redemption Treasury Price,*" with respect to any redemption date for the USD Notes, means (i) the average of the Redemption Reference Treasury Dealer Quotations for such redemption date, after excluding the highest and lowest such Redemption Reference Treasury Dealer Quotations (unless there is more than one highest or lowest quotation, in which case only one such highest and/or lowest quotation shall be excluded), or (ii) if the Quotation Agent obtains fewer than four such Redemption Reference Treasury Dealer Quotations, the average of all such Redemption Reference Treasury Dealer Quotations.

"*Independent Investment Banker*" means one of the Redemption Reference Treasury Dealers appointed by JCI plc.

"*Quotation Agent*" means a Redemption Reference Treasury Dealer appointed as such by JCI plc.

"*Redemption R*eference Treasury Dealer" means (1) each of Barclays Capital Inc. and Citigroup Global Markets Inc. (with respect to the 2031 Notes), Citigroup Global Markets Inc. and BofA Securities, Inc. (with respect to the 2030 Notes); and J.P. Morgan Securities LLC, BofA Securities, Inc. and Morgan Stanley & Co. LLC (with respect to the 2032 USD Notes) (or their respective Affiliates that are Primary Treasury Dealers (as defined below)) and their respective successors and (2) two other Primary Treasury Dealers selected by JCI plc after consultation with the Independent Investment Banker; provided, however, that if any of the foregoing shall cease to be a primary U.S. government securities dealer in New York City (a "*Primary Treasury Dealer*"), JCI plc will substitute therefor another Primary Treasury Dealer.

"*Redemption Reference Treasury Dealer Quotations,*" with respect to each Redemption Reference Treasury Dealer and any redemption date for the USD Notes, means the average, as determined by the Quotation Agent, of the bid and offer prices at 11:00 a.m., New York City time, for the Comparable Redemption Treasury Issue (expressed in each case as a percentage of its principal amount) for settlement on the redemption date quoted in writing to the Quotation Agent by such Redemption Reference Treasury Dealer on the third business day preceding such redemption date.

Redemption Upon Changes in Withholding Taxes

Either or both of the Issuers may redeem all, but not less than all, of the Notes of a series under the following conditions:

- if there is an amendment to, or change in, the laws or regulations of a Relevant Taxing Jurisdiction (as defined below) or any change in the written application or official written interpretation of such laws or regulations, including any action taken by, or a change in published administrative practice of, a taxing authority or a holding by a court of competent jurisdiction, regardless of whether such action, change or holding is with respect to either or both of the Issuers, which amendment or change is publicly announced and becomes effective on or after the date of issuance of such series of Notes (or, in the case of any Relevant Taxing Jurisdiction that becomes a Relevant Taxing Jurisdiction after such date of issuance, after such later date);

- as a result of such amendment or change, either or both of the Issuers become, or there is a material probability that either or both of the Issuers will become obligated to pay Additional Amounts (as defined below), on the next payment date with respect to such series of Notes, and such Issuer cannot avoid any such payment obligation by taking reasonable measures available (including having the other Issuer make payments on the Notes if such action would be reasonable);
- the relevant Issuer (or Issuers) delivers to the Trustee a written opinion of independent tax counsel to such Issuer (or Issuers) of recognized standing to the effect that such Issuer (or Issuers) has become, or there is a material probability that it will become, obligated to pay Additional Amounts as a result of a change or amendment described above; in addition, before the Issuer (or Issuers) mails notice of redemption of the Notes as described below, it will deliver to the Trustee an officer's certificate to the effect that the obligation to pay Additional Amounts cannot be avoided by such Issuer by taking reasonable measures available (including having the other Issuer make payments on the Notes if such action would be reasonable); and
- following the delivery of the opinion described in the previous bullet point, the relevant Issuer (or Issuers) provides notice of redemption for such series of Notes not less than 10 days, but not more than 90 days, prior to the redemption date. The notice of redemption cannot be given more than 90 days before the earliest date on which the Issuer (or Issuers) would be otherwise required to pay Additional Amounts, and the obligation to pay Additional Amounts must still be in effect when the notice is given.

Upon the occurrence of each of the bullet points above, the relevant Issuer (or Issuers) may redeem such series of Notes at a redemption price equal to 100% of the principal amount thereof, together with accrued and unpaid interest, if any, thereon to, but excluding, the redemption date and all Additional Amounts (if any) then due and that will become due on such redemption date as a result of the redemption or otherwise (subject to the right of holders of record on the relevant record date to receive interest due on an interest payment date that is prior to the redemption date and Additional Amounts (if any) in respect thereof).

The foregoing provisions shall apply *mutatis mutandis* to any Successor Company or Successor Co-Issuer (each as defined below).

Notice of Redemption

Notice of any redemption of any series of Notes will be mailed, or delivered electronically if the Notes to be redeemed are held by any depositary, at least 10 days but not more than 90 days before the date fixed for such redemption to each holder of Notes to be redeemed. If less than all of a series of Notes are to be redeemed, the Trustee will select the outstanding Notes of such series to be redeemed in accordance with a method that complies with the requirements, if any, of any stock exchange on which the Notes of such series are listed, and the applicable procedures of the depositary, if such Notes are held by any depositary; provided, however, that with respect to any series of Notes not listed on any stock exchange and/or held by a depositary, the Trustee will select such Notes by lot or by such other method that the Trustee considers fair and appropriate.

No Euro Notes of a principal amount of €100,000 or less shall be redeemed in part. No USD Notes of a principal amount of $2,000 or less shall be redeemed in part. Unless the Issuers default in payment of the redemption price, on and after the redemption date, interest will cease to accrue on Notes or portions thereof called for redemption. Additionally, at any time, the Issuers may repurchase Notes in the open market and may hold such Notes or surrender such Notes to the trustee for cancellation.

If any redemption date of any Note is not a business day, then payment of principal and interest may be made on the next succeeding business day with the same force and effect as if made on the nominal redemption date and no interest will accrue for the period after such nominal date.

Payment of Additional Amounts

All payments in respect of the Notes will be made by (or on behalf of) the Issuers free and clear of, and without withholding or deduction for or on account of, any present or future taxes, duties, levies, imposts, assessments or governmental charges of whatever nature (including, without limitation, penalties and interest and other similar liabilities related thereto) ("*Taxes*"), unless the withholding or deduction of such Taxes is required by law.

In the event that the Issuers are required to withhold or deduct any amount for or on account of any Taxes imposed or levied by or on behalf of Ireland, Luxembourg or any other jurisdiction (other than the United States) in which either of the Issuers is incorporated, resident or doing business for tax purposes or from or through which payments by or on behalf of the Issuers are made, or any political subdivision or any authority thereof or therein (each, but not including the United States or any political subdivision or any authority thereof or therein, a "*Relevant Taxing Jurisdiction*"), from any payment made under or with respect to any Note (including, without limitation, payments of principal, redemption price, purchase price, interest or premium), the Issuers will pay such additional amounts ("*Additional Amounts*") so that the net amount received by each holder or beneficial owner of Notes (including Additional Amounts) after such withholding or deduction will equal the amount that such holder or beneficial owner would have received if such Taxes had not been required to be withheld or deducted.

Additional Amounts will not be payable with respect to a payment made to a holder or beneficial owner of Notes or a holder of beneficial interests in Global Securities where such holder or beneficial owner is subject to taxation on such payment by the Relevant Taxing Jurisdiction for or on account of:

- any Taxes that are imposed or withheld because such holder or beneficial owner (or a fiduciary, settlor, beneficiary, or member of such holder or beneficial owner if such holder or beneficial owner is an estate, trust, partnership, limited liability company or other fiscally transparent entity, or a Person holding a power over an estate or trust administered by a fiduciary holder): (i) is or was present or engaged in, or is or was treated as present or engaged in, a trade or business in the Relevant Taxing Jurisdiction or has or had a permanent establishment or other taxable presence in the Relevant Taxing Jurisdiction; or (ii) has or had any present or former connection (other than the mere fact of ownership of such Notes) with the Relevant Taxing Jurisdiction, including being or having been a national citizen or resident thereof, being treated as being or having been a resident thereof or being or having been physically present therein;
- any estate, inheritance, gift, transfer, personal property or similar Taxes imposed with respect to the Notes;
- any Taxes imposed as a result of the presentation of such Notes, where presentation is required, for payment on a date more than 30 days after the date on which such payment became due and payable or the date on which payment thereof is duly provided for, whichever is later, except to the extent that the beneficiary or holder thereof would have been entitled to the payment of Additional Amounts had such Notes been presented for payment on any date during such 30-day period;
- any Taxes imposed or withheld as a result of the failure of such holder or beneficial owner, upon a written request, made to the holder or beneficial owner in writing at least 30 days before any such withholding or deduction would be made, by an Issuer, broker or other withholding agent, to timely and accurately comply (to the extent such holder or beneficial owner is legally eligible to do so) with any applicable certification, information, documentation or other reporting requirements concerning the nationality, residence, identity or connection of the holder or beneficial owner with the Relevant Taxing Jurisdiction, if such compliance is required by statute or regulation of the Relevant Taxing Jurisdiction as a precondition to relief or exemption from such Taxes;
- any Taxes that are payable by any method other than withholding or deduction by the Issuers or any paying agent from payments in respect of such Notes;

- (with respect to the 2027 Notes and the 2032 Euro Notes) has presented the Notes for payment through a bank, encashment agent or paying agent and a withholding or deduction for Taxes arises which would not have been imposed if the Notes had been presented to another bank, encashment agent or paying agent in a different Member State of the European Union;
- any withholding or deduction required pursuant to Sections 1471 through 1474 of the U.S. Internal Revenue Code of 1986, as amended (the "*Code*"), as of the issue date of the Notes (or any amended or successor provisions of such sections that are substantively comparable and not materially more onerous to comply with), any regulations thereunder or official interpretations thereof, any agreements entered into pursuant to Section 1471(b) of the Code, or any law or regulation implemented pursuant to an intergovernmental agreement between a non-U.S. jurisdiction and the United States with respect to the foregoing; or
- any combination of the above.

Additional Amounts also will not be payable for any Taxes that are imposed with respect to any payment on a Note to any holder who is a fiduciary or partnership or person other than the sole beneficial owner of such payment to the extent that no Additional Amounts would have been payable had the beneficial owner of the applicable Note been the holder of such Note.

The Issuers also:

- will make such withholding or deduction of Taxes;
- will remit the full amount of Taxes so deducted or withheld to the relevant tax authority in accordance with all applicable laws;
- will use their commercially reasonable efforts to obtain from each relevant tax authority imposing such Taxes certified copies of tax receipts evidencing the payment of any Taxes so deducted or withheld; and
- upon request, will make available to the holders of the Notes, within 90 days after the date the payment of any Taxes deducted or withheld is due pursuant to applicable law, certified copies of tax receipts evidencing such payment by the Issuers (unless, notwithstanding the Issuers' efforts to obtain such receipts, the same are not obtainable, in which case the Issuers will provide other evidence of payments by the Issuers).

At least 30 days prior to each date on which any payment under or with respect to the Notes is due and payable, if the Issuers will be obligated to pay Additional Amounts with respect to such payment, the Issuers will deliver to the Trustee an Officer's Certificate stating the fact that such Additional Amounts will be payable, the amounts so payable and such other information as is necessary to enable the Trustee to pay such Additional Amounts to holders of such Notes on the payment date (unless such obligation to pay Additional Amounts arises less than 30 days prior to the relevant payment date, in which case the Issuers may deliver such Officer's Certificate as promptly as practicable after the date that is 30 days prior to the payment date).

In addition, the Issuers will pay for any present or future stamp, issue, registration, property, excise, transfer, court or documentary or other similar Taxes and duties, including interest, penalties and Additional Amounts with respect thereto, payable in a Relevant Taxing Jurisdiction in respect of the creation, execution, issue, offering, enforcement, redemption or retirement of the Notes or any other document or instrument referred to therein, or the receipt of any payments with respect thereto.

Upon the Issuers' request, each holder and beneficial owner shall provide a properly completed and executed IRS Form W-9 or IRS Form W-8, as applicable, as would have been applicable if the Issuers were incorporated in the United States of America, any State thereof or the District of Columbia.

The foregoing provisions shall survive any termination or the discharge of the Indenture and shall apply *mutatis mutandis* to any Successor Company or Successor Co-Issuer.

Whenever in the Indenture, any Notes, or in this "*Description of JCI plc and TFSCA Notes*" there is mentioned, in any context, the payment of principal, premium, if any, redemption price, repurchase price, interest or any other amount payable under or with respect to any Notes, such mention shall be deemed to include the payment of Additional Amounts to the extent payable in the particular context.

Offer to Repurchase Upon Change of Control Triggering Event

Upon the occurrence of a Change of Control Triggering Event, unless we have exercised our right to redeem the Notes of such series as described above under "—*Optional Redemption*," each holder of the Notes will have the right to require us to purchase all or a portion (equal to €100,000 or an integral multiple of €1,000 in excess thereof with respect to the Euro Notes, and equal to $2,000 or an integral multiple of $1,000 in excess thereof with respect to the USD Notes) of such holder's Notes pursuant to the offer described below (the "*Change of Control Offer*"), at a purchase price equal to 101% of the principal amount thereof plus accrued and unpaid interest, if any, thereon to, but excluding, the date of purchase (subject to the right of holders of record on the relevant record date to receive interest due on the relevant interest payment date) (the "*Change of Control Payment*"). If the Change of Control Payment Date (as defined below) falls on a day that is not a business day, the related payment of the Change of Control Payment will be made on the next business day as if it were made on the date such payment was due, and no interest will accrue on the amounts so payable for the period from and after such date to the next business day.

Within 30 days following the date upon which the Change of Control Triggering Event occurs or, at our option, prior to and conditioned on the occurrence of, any Change of Control, but after the public announcement of the pending Change of Control, we will be required to send, by first class mail, or deliver electronically if the Notes are held by any depositary, a notice to each holder of Notes, with a copy to the Trustee, which notice will govern the terms of the Change of Control Offer. Such notice will state, among other things, the purchase date, which must be no earlier than 30 days nor later than 60 days from the date such notice is mailed or delivered electronically (or, in the case of a notice mailed or delivered electronically prior to the date of consummation of a Change of Control, no earlier than the date of the occurrence of the Change of Control), other than as may be required by law (the "*Change of Control Payment Date*"). The notice, if mailed or delivered electronically prior to the date of consummation of the Change of Control, will state that the Change of Control Offer is conditioned on the Change of Control being consummated on or prior to the Change of Control Payment Date.

On the Change of Control Payment Date, we will, to the extent lawful:

- accept or cause a third party to accept for payment all Notes properly tendered pursuant to the Change of Control Offer;
- deposit or cause a third party to deposit with the applicable paying agent an amount equal to the Change of Control Payment in respect of all Notes properly tendered; and
- deliver or cause to be delivered to the Trustee the Notes properly accepted together with an Officer's Certificate stating the aggregate principal amount of Notes being repurchased.

We will not be required to make a Change of Control Offer with respect to the Notes if a third party makes such an offer in the manner, at the times and otherwise in compliance with the requirements for such an offer made by us and such third party purchases all the Notes properly tendered and not withdrawn under its offer. In addition, we will not repurchase any Notes if there has occurred and is continuing on the Change of Control Payment Date an Event of Default under the Indenture, other than a Default in the payment of the Change of Control Payment on the Change of Control Payment Date.

We must comply in all material respects with the requirements of Rule 14e-1 under the Exchange Act and any other securities laws and regulations thereunder to the extent those laws and regulations are applicable in connection with the repurchase of the Notes as a result of a Change of Control Triggering Event. To the extent that the provisions of any such securities laws or regulations conflict with the Change of Control Offer provisions of the Notes, we will be required to comply with those securities laws and regulations and will not be deemed to have breached our obligations under the Change of Control Offer provisions of the Indenture with respect to the Notes by virtue of any such conflict.

The definition of Change of Control includes a phrase relating to the direct or indirect sale, lease, transfer, conveyance or other disposition of "all or substantially all" of the properties or assets of JCI plc and its subsidiaries taken as a whole. Although there is a limited body of case law interpreting the phrase "substantially all," there is no precise, established definition of the phrase under applicable law. Accordingly, the applicability of the requirement that we offer to repurchase the Notes as a result of a sale, lease, transfer, conveyance or other disposition of less than all of the assets of JCI plc and its subsidiaries taken as a whole to another "person" or "group" (as those terms are used in Section 13(d)(3) of the Exchange Act) may be uncertain.

Other Provisions of the Notes

Claims against the Issuers for the payment of principal or Additional Amounts, if any, of the Notes will be prescribed ten years after the applicable due date for payment thereof. Claims against the Issuers for the payment of interest, if any, of the Notes will be prescribed five years after the applicable due date for payment of interest.

Certain Covenants

The Indenture contains the following covenants:

Limitation on Liens

JCI plc will not, and will not permit any Restricted Subsidiary to, issue, incur, assume or guarantee any Indebtedness that is secured by a mortgage, pledge, security interest, lien or encumbrance (each a "*lien*") upon any asset that at the time of such issuance, assumption or guarantee constitutes a Principal Property, or any shares of stock of or Indebtedness issued by any Restricted Subsidiary, whether now owned or hereafter acquired, without effectively providing that, for so long as such lien shall continue in existence with respect to such secured Indebtedness, the Notes and any other debt securities issued pursuant to the Base Indenture (together with, if JCI plc shall so determine, any other Indebtedness of JCI plc ranking equally with the Notes and any other debt securities issued pursuant to the Base Indenture, it being understood that for purposes hereof, Indebtedness which is secured by a lien and Indebtedness which is not so secured shall not, solely by reason of such lien, be deemed to be of different ranking) shall be equally and ratably secured by a lien ranking ratably with or equal to (or at JCI plc's option prior to) such secured Indebtedness; provided, however, that the foregoing covenant shall not apply to:

- liens existing on the date the Notes are first issued;
- liens on the stock, assets or Indebtedness of a Person existing at the time such Person becomes a Restricted Subsidiary, unless created in contemplation of such Person becoming a Restricted Subsidiary;
- liens on any assets or Indebtedness of a Person existing at the time such Person is merged with or into or consolidated with or acquired by JCI plc or a Restricted Subsidiary or at the time of a purchase, lease or other acquisition of the assets of a corporation or firm as an entirety or substantially as an entirety by JCI plc or any Restricted Subsidiary; provided, however, that no such lien shall extend to any other Principal Property of JCI plc or such Restricted Subsidiary prior to such acquisition or to any other Principal Property thereafter acquired other than additions to such acquired property;
- liens on any Principal Property existing at the time of acquisition thereof by JCI plc or any Restricted Subsidiary, or liens to secure the payment of the purchase price of such Principal Property by JCI plc or any Restricted Subsidiary, or to secure any Indebtedness incurred, assumed or guaranteed by JCI plc or a Restricted Subsidiary for the purpose of financing all or any part of the purchase price of such Principal Property or improvements or construction thereon, which Indebtedness is incurred, assumed or guaranteed prior to, at the time of or within one year after such acquisition, or in the case of real property, completion of such improvement or construction or commencement of full operation of such property, whichever is later; provided, however, that in the case of any such acquisition, construction or improvement, the lien shall not apply to any other Principal Property, other than the Principal Property so acquired, constructed or improved, and accessions thereto and improvements and replacements thereof and the proceeds of the foregoing;
- liens securing Indebtedness owing by any Restricted Subsidiary to JCI plc or a subsidiary thereof;

- liens in favor of the United States of America or any State thereof, or any department, agency or instrumentality or political subdivision of the United States of America or any State thereof, or in favor of any other country or any political subdivision thereof, to secure partial, progress, advance or other payments pursuant to any contract, statute, rule or regulation or to secure any Indebtedness incurred or guaranteed for the purpose of financing all or any part of the purchase price, or, in the case of real property, the cost of construction or improvement, of the Principal Property subject to such liens, including liens incurred in connection with pollution control, industrial revenue or similar financings;
- pledges, liens or deposits under workers' compensation or similar legislation, and liens thereunder that are not currently dischargeable, or in connection with bids, tenders, contracts, other than for the payment of money, or leases to which JCI plc or any Restricted Subsidiary is a party, or to secure the public or statutory obligations of JCI plc or any Restricted Subsidiary, or in connection with obtaining or maintaining self-insurance, or to obtain the benefits of any law, regulation or arrangement pertaining to unemployment insurance, old age pensions, social security or similar matters, or to secure surety, performance, appeal or customs bonds to which JCI plc or any Restricted Subsidiary is a party, or in litigation or other proceedings in connection with the matters heretofore referred to in this bullet, such as interpleader proceedings, and other similar pledges, liens or deposits made or incurred in the ordinary course of business;
- liens created by or resulting from any litigation or other proceeding that is being contested in good faith by appropriate proceedings, including liens arising out of judgments or awards against JCI plc or any Restricted Subsidiary with respect to which JCI plc or such Restricted Subsidiary in good faith is prosecuting an appeal or proceedings for review or for which the time to make an appeal has not yet expired; or final unappealable judgment liens which are satisfied within 15 days of the date of judgment; or liens incurred by JCI plc or any Restricted Subsidiary for the purpose of obtaining a stay or discharge in the course of any litigation or other proceeding to which JCI plc or such Restricted Subsidiary is a party;
- liens for taxes or assessments or governmental charges or levies not yet due or delinquent; or that can thereafter be paid without penalty, or that are being contested in good faith by appropriate proceedings; landlord's liens on property held under lease; and any other liens or charges incidental to the conduct of the business of JCI plc or any Restricted Subsidiary, or the ownership of their respective assets, that were not incurred in connection with the borrowing of money or the obtaining of advances or credit and that, in the opinion of the Board of Directors of JCI plc, do not materially impair the use of such assets in the operation of the business of JCI plc or such Restricted Subsidiary or the value of such Principal Property for the purposes of such business;
- liens to secure JCI plc's or any Restricted Subsidiary's obligations under agreements with respect to spot, forward, future and option transactions, entered into in the ordinary course of business;
- liens not permitted by the foregoing bullets, inclusive, if at the time of, and after giving effect to, the creation or assumption of any such lien, the aggregate amount of all outstanding Indebtedness of JCI plc and the Restricted Subsidiaries, without duplication, secured by all such liens not so permitted by the foregoing bullets, inclusive, together with the Attributable Debt in respect of Sale and Lease-Back Transactions permitted by the first bullet under "Limitation on Sale and Lease-Back Transactions" below, do not exceed the greater of $100,000,000 and 10% of Consolidated Net Worth; and
- any extension, renewal or replacement (or successive extensions, renewals or replacements) in whole or in part, of any lien referred to in the foregoing bullets inclusive; provided, however, that the principal amount of Indebtedness secured thereby unless otherwise excepted under the foregoing bullets shall not exceed the principal amount of Indebtedness so secured at the time of such extension, renewal or replacement (plus any premium, fee, cost, expense or charge payable in connection with any such extension, renewal or replacement), and that such extension, renewal or replacement shall be limited to all or a part of the assets (or any replacements therefor) that secured the lien so extended, renewed or replaced, plus improvements and construction on such assets.

Limitation on Sale and Lease-Back Transactions

JCI plc will not, and will not permit any Restricted Subsidiary to, enter into any Sale and Lease-Back Transaction unless:

- JCI plc or such Restricted Subsidiary, at the time of entering into a Sale and Lease-Back Transaction, would be entitled to incur Indebtedness secured by a lien on the Principal Property to be leased in an amount at least equal to the Attributable Debt in respect of such Sale and Lease-Back Transaction, without equally and ratably securing the Notes pursuant to the covenant described under "*Limitations on Liens*" above; or
- the direct or indirect proceeds of the sale of the Principal Property to be leased are at least equal to the fair value of such Principal Property, as determined by JCI plc's Board of Directors in good faith, and an amount equal to the net proceeds from the sale of the assets so leased is applied, within 180 days of the effective date of any such Sale and Lease-Back Transaction, to the purchase or acquisition (or, in the case of real property, commencement of the construction) of assets or to the retirement (other than at maturity or pursuant to a mandatory sinking fund or mandatory redemption or prepayment provision) of the Notes and any other debt securities issued pursuant to the Base Indenture, or of Funded Indebtedness ranking on a parity with or senior to the Notes and any other debt securities issued pursuant to the Base Indenture; provided that there shall be credited to the amount of net proceeds required to be applied pursuant to this provision an amount equal to the sum of (i) the principal amount of the Notes and any other debt securities issued pursuant to the Base Indenture delivered within 180 days of the effective date of such Sale and Lease-Back Transaction to the Trustee for retirement and cancellation and (ii) the principal amount of other Funded Indebtedness voluntarily retired by JCI plc within such 180-day period, excluding retirements of the Notes and any other debt securities issued pursuant to the Base Indenture and other Funded Indebtedness at maturity or pursuant to mandatory sinking fund or mandatory redemption or prepayment provisions.

Merger and Consolidation

JCI plc will not, directly or indirectly, consolidate with or merge with or into, or convey, transfer or lease all or substantially all of its assets in one or a series of related transactions to, any Person, unless:

(1) the resulting, surviving or transferee Person (the "*Successor Company*") will be a corporation, limited liability company, public limited company, limited partnership or other entity organized and existing under the laws of (u) the United States of America, any State thereof or the District of Columbia, (v) Ireland, (w) England and Wales, (x) Jersey, (y) any member state of the European Union as in effect on the date the Notes are first issued or (z) Switzerland; provided that the Successor Company (if not the Company) will expressly assume, by a supplemental indenture, executed and delivered to the Trustee, in form reasonably satisfactory to the Trustee, all the obligations of the Company under the Notes and the Indenture;

(2) immediately after giving effect to such transaction (and treating any Indebtedness which becomes an obligation of the Successor Company or any Restricted Subsidiary as a result of such transaction as having been incurred by the Successor Company or such Restricted Subsidiary at the time of such transaction), no Default shall have occurred and be continuing; and

(3) the Company shall have delivered to the Trustee an Officer's Certificate and an Opinion of Counsel, each stating that such consolidation, merger or transfer and such supplemental indenture (if any) comply with the Indenture.

Notwithstanding the foregoing, (A) any conveyance, transfer or lease of assets between or among the Company and its subsidiaries, including the Co-Issuer, shall not be prohibited under the Indenture and (B) the Company may, directly or indirectly, consolidate with or merge with or into an Affiliate incorporated solely for the purpose of reincorporating the Company in another jurisdiction within the United States of America, any State thereof or the District of Columbia, Ireland, England and Wales, Jersey, any member state of the European Union as in effect on the date the Notes are first issued or Switzerland to realize tax or other benefits.

The Successor Company will succeed to, and be substituted for, and may exercise every right and power of, the Company under the Indenture, and the predecessor issuer, other than in the case of a lease, will be automatically released from all obligations under the Notes and the Indenture, including, without limitation, the obligation to pay the principal of and interest on the Notes.

The Co-Issuer will not, directly or indirectly, consolidate with or merge with or into, or convey, transfer or lease all or substantially all of the Co-Issuer's assets in one or a series of related transactions to, any Person, unless:

(1) the resulting, surviving or transferee Person (the "*Successor Co-Issuer*") will be a corporation, limited liability company, public limited company, limited partnership or other entity organized and existing under the laws of (u) the United States of America, any State thereof or the District of Columbia, (v) Ireland, (w) England and Wales, (x) Jersey, (y) any member state of the European Union as in effect on the date the Notes are first issued or (z) Switzerland; provided that the Successor Co-Issuer (if not the Co-Issuer) will expressly assume, by a supplemental indenture, executed and delivered to the Trustee, in form reasonably satisfactory to the Trustee, all the obligations of the Co-Issuer under the Notes and the Indenture;

(2) immediately after giving effect to such transaction (and treating any Indebtedness which becomes an obligation of the Successor Co-Issuer or any Restricted Subsidiary as a result of such transaction as having been incurred by the Successor Co-Issuer or such Restricted Subsidiary at the time of such transaction), no Default shall have occurred and be continuing; and

(3) the Co-Issuer shall have delivered to the Trustee an Officer's Certificate and an Opinion of Counsel, each stating that such consolidation, merger or transfer and such supplemental indenture (if any) comply with the Indenture.

Notwithstanding the foregoing, the Co-Issuer may, directly or indirectly, consolidate with or merge with or into an Affiliate incorporated solely for the purpose of reincorporating the Co-Issuer in another jurisdiction within the United States of America, any State thereof or the District of Columbia, Ireland, England and Wales, Jersey, any member state of the European Union as in effect on the date the Notes are first issued or Switzerland to realize tax or other benefits.

The Successor Co-Issuer will succeed to, and be substituted for, and may exercise every right and power of, the Co-Issuer under the Indenture, and the predecessor issuer, other than in the case of a lease, will be automatically released from all obligations under the Notes and the Indenture, including, without limitation, the obligation to pay the principal of and interest on the Notes.

Reports by JCI plc

So long as any Notes are outstanding, JCI plc shall file with the Trustee, within 15 days after JCI plc is required to file with the SEC, copies of the annual reports and of the information, documents and other reports (or copies of such portions of any of the foregoing as the SEC may from time to time by rules and regulations prescribe) that JCI plc may be required to file with the SEC pursuant to Section 13 or Section 15(d) of the Exchange Act. JCI plc shall be deemed to have complied with the previous sentence to the extent that such information, documents and reports are filed with the SEC via EDGAR, or any successor electronic delivery procedure; provided, however, that the Trustee shall have no obligation whatsoever to determine whether or not such information, documents or reports have been filed pursuant to the EDGAR system (or its successor). Delivery of such reports, information and documents to the Trustee is for informational purposes only and the Trustee's receipt of such shall not constitute constructive notice of any information contained therein or determinable from information contained therein, including the Issuers' compliance with any of their covenants under the Indenture (as to which the Trustee is entitled to rely exclusively on Officer's Certificates).

The Issuers will furnish to the Trustee on or before 120 days after the end of each fiscal year an Officer's Certificate stating that in the course of the performance by the signers of their duties as Officers of the Issuers, they would normally have knowledge of any Default by the Issuers in the performance or fulfillment or observance of any covenants or agreements contained in the Indenture during the preceding fiscal year, stating whether or not they have knowledge of any such Default and, if so, specifying each such Default of which the signers have knowledge and the nature thereof.

Listing

The Notes are listed on the New York Stock Exchange. We have no obligation to maintain such listing, and we may delist the Notes at any time.

Events of Default

As to the Notes of each series, an "*Event of Default*" means any one of the following events (whatever the reason for such Event of Default and whether it shall be voluntary or involuntary or be effected by operation of law or pursuant to any judgment, decree or order of any court or any order, rule or regulation of any administrative or governmental body):

(1) failure to pay any interest on the Notes of such series when due, which failure continues for 30 days;

(2) failure to pay principal or premium, if any, with respect to the Notes of such series when due;

(3) failure on the part of the Issuers to observe or perform any other covenant, warranty or agreement in the Notes of such series, or in the Indenture as it relates to the Notes of such series, other than a covenant, warranty or agreement, a Default in whose performance or whose breach is specifically dealt with elsewhere in the section of the Indenture governing Events of Default, if the failure continues for 90 days after written notice by the Trustee or the holders of at least 25% in aggregate principal amount of the Notes of such series then outstanding;

(4) an Event of Default with respect to any other series of debt securities issued under the Indenture or an uncured or unwaived failure to pay principal of or interest on any of our other obligations for borrowed money beyond any period of grace with respect thereto if, in either case, (a) the aggregate principal amount thereof is in excess of $300,000,000; and (b) the default in payment is not being contested by us in good faith and by appropriate proceedings; and

(5) specified events of bankruptcy, insolvency, receivership or reorganization.

However, the Event of Default in clause (4) above is subject to the following:

- if such Event of Default with respect to such other series of debt securities issued under the Indenture or such default in payment with respect to such other obligations for borrowed money shall be remedied or cured by the Issuers or waived by the requisite holders of such other series of debt securities or such other obligations for borrowed money, then the Event of Default under the Indenture by reason thereof shall be deemed likewise to have been thereupon remedied, cured or waived without further action upon the part of either the Trustee or any of the holders of Notes of such series; and
- subject to certain duties, responsibilities and rights of the Trustee under the Indenture, the Trustee shall not be charged with knowledge of any such Event of Default with respect to such other series of debt securities issued under the Indenture or such payment default with respect to such other obligations for borrowed money unless written notice thereof shall have been given to a Trust Officer of the Trustee by the Issuers, by the holder or an agent of the holder of such other obligations for borrowed money, by the trustee then acting under any indenture or other instrument under which such payment default with respect to such other obligations for borrowed money shall have occurred, or by the holders of not less than 25% in aggregate principal amount of outstanding debt securities of such other series.

Notice and Declaration of Defaults

The Indenture provides that the Trustee will, within the later of 90 days after the occurrence of a Default with respect to any Notes of a series outstanding which is continuing and which is known to a Trust Officer of the Trustee, or 60 days after such Default is actually known to such Trust Officer of the Trustee or written notice of such

Default is received by the Trustee, give to the holders of the Notes of such series notice, by mail as the names and addresses of such holders appear on the security register, or electronically if the Notes of such series are held by any depositary, of all uncured Defaults known to it, including events specified above without grace periods, unless such Defaults shall have been cured before the giving of such notice; provided that, except in the case of Default in the payment of the principal of, premium, if any, or interest on any of the Notes of a series, the Trustee shall be protected in withholding such notice to the holders if the Trustee in good faith determines that withholding of such notice is in the interests of the holders of the Notes of such series.

The Trustee or the holders of not less than 25% in aggregate principal amount of the outstanding Notes of a series may declare the Notes of such series immediately due and payable upon the occurrence of any Event of Default. The holders of a majority in principal amount of the outstanding debt securities of all series issued under the Base Indenture affected by such waiver (voting as one class), on behalf of the holders of all of the debt securities of all such series, may waive any existing Default and its consequences, except a Default in the payment of principal, premium, if any, or interest, including sinking fund payments (provided, however, that only holders of a majority in aggregate principal amount of the debt securities of an applicable series may rescind an acceleration with respect to such series and its consequences, including any related payment default that resulted from such acceleration).

Actions upon Default

In case an Event of Default with respect to the Notes of a series occurs and is continuing, the Indenture provides that the Trustee will be under no obligation to exercise any of its rights or powers under the Indenture at the request, order or direction of any of the holders of Notes of such series unless the applicable holders have offered to the Trustee security and indemnity, satisfactory to the Trustee in its sole discretion, against any loss, liability or expense which may be incurred thereby. The right of a holder of any Note of a series to institute a proceeding with respect to the Notes of such series is subject to conditions precedent including notice and indemnity to the Trustee, but the right of any holder of any Note of such series to receive payment of the principal of, and premium, if any, and interest on their due dates or to institute suit for the enforcement thereof shall not be impaired or affected without the consent of such holder.

The holders of a majority in aggregate principal amount of the Notes of a series outstanding will have the right to direct the time, method and place for conducting any proceeding for any remedy available to the Trustee or exercising any power or trust conferred on the Trustee. Any direction by such holders will be in accordance with law and the provisions of the Indenture. Subject to certain provisions of the Indenture, the Trustee shall have the right to decline to follow any such direction if the Trustee in good faith, by a Trust Officer or Trust Officers of the Trustee, shall determine that the action or proceeding so directed may not be lawfully taken, would involve the Trustee in personal liability, would be materially or unjustly prejudicial to the rights of holders of Notes of such series not joining in such direction or would be unduly prejudicial to the interests of the holders of the debt securities issued under the Base Indenture of all series not joining in the giving of such direction. The Trustee will be under no obligation to act in accordance with any such direction unless the applicable holders offer the Trustee reasonable security and indemnity, satisfactory to the Trustee in its sole discretion, against costs, expenses and liabilities which may be incurred thereby.

Modification of the Indenture

The Issuers and the Trustee may from time to time and at any time enter into an indenture or indentures supplemental to the Indenture, which shall conform to the provisions of the Trust Indenture Act as then in effect, without the consent of the holders of the Notes, for one or more of the following purposes:

- to cure any ambiguity, defect or inconsistency in the Indenture or the Notes, including making any such changes as are required for the Indenture to comply with the Trust Indenture Act;
- to add an additional obligor on the Notes or to add a guarantor of the Notes, or to evidence the succession of another Person to the Company or the Co-Issuer or any additional obligor or guarantor of the Notes, or successive successions, and the assumption by any Successor Company or Successor Co-Issuer of the covenants, agreements and obligations of such Company, Co-Issuer or such obligor or guarantor, as the case

may be, pursuant to provisions in the Indenture concerning consolidation, merger, the sale of assets or successor entities;

- to provide for uncertificated debt securities in addition to or in place of certificated debt securities (*provided,* that the uncertificated Notes are issued in registered form for purposes of Section 163(f) of the Code);
- to add to the covenants of the Issuers for the benefit of the holders of all or any series of Notes (and if such covenants are to be for the benefit of less than all outstanding series of debt securities, stating that such covenants are expressly being included solely for the benefit of such series) or to surrender any of the Issuers' rights or powers under the Indenture;
- to add any additional Events of Default for the benefit of the holders of the Notes of all or any series of Notes (and if such Events of Default are to be applicable to less than all outstanding series, stating that such Events of Default are expressly being included solely to be applicable to such series);
- to change or eliminate any of the provisions of the Indenture, provided that any such change or elimination shall not become effective with respect to any outstanding Notes created prior to the execution of such supplemental indenture which is entitled to the benefit of such provision;
- to secure the Notes;
- to make any other change that does not adversely affect the rights of any holder of the Notes in any material respect;
- to provide for the issuance of and establish the form and terms and conditions of a series of debt securities, to provide which, if any, of the covenants of the Issuers shall apply to such series, to provide which of the events of default set forth in the Base Indenture shall apply to such series, to add a co-issuer, to name one or more guarantors and provide for guarantees of such series, to provide for the terms and conditions upon which the guarantee by any guarantor of such series may be released or terminated, or to define the rights of the holders of such series of debt securities;
- to issue additional Notes to the extent permitted by the Indenture; provided that such additional Notes have the same terms as, and be deemed part of the same series as, the applicable series of Notes to the extent required under the Indenture; or
- to evidence and provide for the acceptance of appointment under the Indenture by a successor Trustee with respect to the Notes and to add to or change any of the provisions of the Indenture as shall be necessary to provide for or facilitate the administration of the trust thereunder by more than one Trustee.

In addition, under the Indenture, with the consent (evidenced as provided in the Indenture) of the holders of not less than a majority in aggregate principal amount of the outstanding debt securities of all series affected by such supplemental indenture or indentures (voting as one class), the Issuers and the Trustee from time to time and at any time may enter into an indenture or indentures supplemental to the Indenture for the purpose of adding any provisions to or changing in any manner or eliminating any of the provisions of the Indenture or of any supplemental indenture thereto or of modifying in any manner not covered by the immediately preceding paragraph the rights of the holders of the debt securities of each such series under the Indenture. However, the following changes may only be made with the consent of each holder of outstanding Notes of a series affected:

- extend a fixed maturity of or any installment of principal of any Notes or reduce the principal amount thereof or reduce the amount of principal of any original issue discount security that would be due and payable upon declaration of acceleration of the maturity thereof;
- reduce the rate of or extend the time for payment of interest on any Notes;
- reduce the premium payable upon the redemption of any Notes;
- make the Notes payable in currency other than that stated in the applicable debt security;
- impair the right to institute suit for the enforcement of any payment in respect of the Notes on or after the fixed maturity thereof or, in the case of redemption, on or after the redemption date;

- reduce the obligation to pay additional amounts or indemnity amounts for Taxes;
- modify the subordination provisions applicable to any Note in a manner adverse in any material respect to the holder thereof; or
- reduce the aforesaid percentage of the Notes, the holders of which are required to consent to any such supplemental indenture or indentures.

A supplemental indenture that changes or eliminates any covenant, event of default set forth in the Base Indenture or other provision of the Indenture that has been expressly included solely for the benefit of one or more particular series of debt securities, if any, or which modifies the rights of the holders of debt securities of such series with respect to such covenant, event of default or other provision, shall be deemed not to affect the rights under the Indenture of the holders of debt securities of any other series.

Notwithstanding anything herein or otherwise, the provisions under the Indenture relative to the Issuers' obligation to make any offer to repurchase the Notes as a result of a Change of Control Triggering Event as provided in Section 4.08 of the Base Indenture may be waived or modified with the written consent of the holders of a majority in principal amount of the outstanding debt securities of the applicable series or multiple affected series.

It will not be necessary for the consent of the holders of the Notes of a series to approve the particular form of any proposed supplement, amendment or waiver, but it shall be sufficient if such consent approves the substance thereof.

Information Concerning the Trustee

If an Event of Default with respect to a series of the Notes has occurred and is continuing, the Trustee shall exercise with respect to such series of Notes such of the rights and powers vested in it by the Indenture, and use the same degree of care and skill in its exercise, as a prudent Person would exercise or use under the circumstances in the conduct of such Person's own affairs. If an Event of Default has occurred and is continuing, the Trustee will be under no obligation to exercise any of its rights or powers under the Indenture at the request, order or direction of any holders of Notes of such series, unless such holders shall have offered to the Trustee security and indemnity, satisfactory to it in its sole discretion, against any loss, liability or expense which may be incurred thereby, and then only to the extent required by the terms of the Indenture. No provision of the Indenture shall require the Trustee to expend or risk its own funds or otherwise incur financial liability in the performance of any of its duties under the Indenture or in the exercise of any of its rights or powers.

The Trustee may resign with respect to the Notes by giving a written notice to the Issuers. The holders of a majority in principal amount of the outstanding Notes of a series may remove the Trustee with respect to the Notes of such series by notifying the Issuers and the Trustee in writing. The Issuers may remove the Trustee if:

- the Trustee has or acquires a "conflicting interest," within the meaning of Section 310(b) of the Trust Indenture Act, and fails to comply with the provisions of Section 310(b) of the Trust Indenture Act, or otherwise fails to comply with the eligibility requirements provided in the Indenture and fails to resign after written request therefor by the Issuers in accordance with the Indenture;
- the Trustee is adjudged a bankrupt or an insolvent or an order for relief is entered with respect to the Trustee under any bankruptcy law;
- a custodian or public officer takes charge of the Trustee or its property; or
- the Trustee becomes incapable of acting.

If the Trustee resigns or is removed or if a vacancy exists in the office of Trustee with respect to either series of the Notes for any reason, the Issuers shall promptly appoint a successor Trustee with respect to the Notes of such series.

A resignation or removal of the Trustee and appointment of a successor Trustee shall become effective only upon the successor Trustee's acceptance of the appointment as provided in the Indenture.

The Trustee and its Affiliates have engaged, currently are engaged, and may in the future engage in financial or other transactions with the Issuers and our Affiliates in the ordinary course of their respective businesses.

Payment and Paying Agents

The Issuers will pay the principal of, premium, if any, and interest on the Notes at any office of ours or any agency designated by us.

The initial paying agent for the Euro Notes is Elavon Financial Services DAC. For so long as the Euro Notes are in global form, payment of principal and interest on, and any other amount due in respect of, the Euro Notes will be made by or to the order of the paying agent on behalf of the common depositary or its nominee as the registered holder thereof. After payment by the Issuers or the paying agent of interest, principal or other amounts in respect of the Euro Notes to the common depositary (or its nominee), the Issuers will not have responsibility or liability for such amounts to Euroclear or Clearstream, or to holders or beneficial owners of book-entry interests in the Euro Notes. The initial paying agent for the USD Notes is the Trustee.

In addition, the Issuers maintain a transfer agent and a security registrar for the Notes. The initial transfer agent and security registrar is the Trustee.

The security registrar as to the Notes maintains a register reflecting ownership of the Notes outstanding from time to time, if any, and together with the applicable transfer agent, will make payments on and facilitate transfers of the Notes on behalf of the Issuers. No service charge will be made for any registration of transfer or exchange of Notes. However, we may require holders to pay any transfer taxes or other similar governmental charges payable in connection with any such transfer or exchange.

The Issuers may change or appoint any paying agent, security registrar or transfer agent with respect to the Notes without prior notice to the holders of the Notes. The Issuers or any of their subsidiaries may act as paying agent, transfer agent or security registrar in respect of any Notes.

Governing Law

The Indenture and any Notes issued thereunder shall be deemed to be a contract made under the internal laws of the State of New York, and for all purposes shall be construed in accordance with the laws of the State of New York without regard to conflicts of laws principles that would require the application of any other law. The Indenture is subject to the provisions of the Trust Indenture Act that are required to be part of the Indenture and shall, to the extent applicable, be governed by such provisions.

For the avoidance of doubt, articles 470-1 to 470-19 of the Luxembourg law of 10 August 1915 relating to commercial companies, as amended, do not apply to the Notes.

Satisfaction and Discharge of the Indenture

The Indenture shall cease to be of further effect with respect to the Notes of either series if, at any time:

(a) The Issuers have delivered or have caused to be delivered to the Trustee for cancellation all Notes of such series theretofore authenticated, other than any Notes of such series that have been destroyed, lost or stolen and that have been replaced or paid as provided in the Indenture, and Notes of such series for whose payment funds or governmental obligations have theretofore been deposited in trust or segregated and held in trust by the Issuers and thereupon repaid to the Issuers or discharged from such trust, as provided in the Indenture; or

(b) all such Notes of such series not theretofore delivered to the Trustee for cancellation have become due and payable or are by their terms to become due and payable within one year or are to be called for redemption within one year under arrangements satisfactory to the Trustee for the giving of notice of redemption, and the Issuers shall irrevocably deposit or cause to be deposited with the Trustee as trust funds the entire amount, in funds or governmental obligations, or a combination thereof, sufficient to pay at maturity or upon redemption all Notes of such series not theretofore delivered to the Trustee for cancellation, including principal, premium, if any, and interest due or to become due on such date of maturity or redemption date, as the case may be, and if in either case the Issuers shall also pay or cause to be paid all other sums payable under the Indenture with respect to such Notes by the Issuers.

With respect to any redemption of any Notes that requires the payment of any premium, the amount deposited pursuant to the above paragraph shall be sufficient for purposes of the Indenture to the extent that an amount is so deposited with the Trustee or paying agent, as applicable, equal to such premium on such Notes calculated as of the date of the notice of redemption, with any deficit on the redemption date only required to be deposited with the Trustee or paying agent, as applicable, on or prior to the redemption date.

Notwithstanding the above, the Issuers may not be discharged from the following obligations, which will survive until the date of maturity or the redemption date, as the case may be, for the Notes:

- to make any interest or principal payments that may be required with respect to the Notes;
- to register the transfer or exchange of the Notes;
- to execute and authenticate the Notes;
- to replace stolen, lost or mutilated Notes;
- to maintain an office or agency with respect to the Notes;
- to maintain paying agencies with respect to the Notes; and
- to appoint new trustees with respect to the Notes as required by the Indenture.

The Issuers also may not be discharged from the following obligations, which will survive the defeasance and discharge of the Notes:

- to compensate and reimburse the Trustee in accordance with the terms of the Indenture;
- to receive unclaimed payments held by the Trustee for at least one year after the date upon which the principal, if any, or interest on the Notes shall have respectively come due and payable and remit those payments to the holders thereof if required; and
- to withhold or deduct taxes as provided in the Indenture.

For purposes of this description the term "*governmental obligations*" shall have the following meaning with respect to the USD Notes: securities that are (i) direct obligations of the United States of America for the payment of which its full faith and credit is pledged or (ii) obligations of a Person controlled or supervised by and acting as an agency or instrumentality of the United States of America, the payment of which is unconditionally guaranteed as a full faith and credit obligation by the United States of America that, in either case, are not callable or redeemable at the option of the issuer thereof, and shall also include a depositary receipt issued by a bank (as defined in Section 3(a)(2) of the Securities Act) as custodian with respect to any such Governmental Obligation or a specific payment of principal of or interest on any such Governmental Obligation held by such custodian for the account of the holder of such depositary receipt; provided, however, that (except as required by law) such custodian is not authorized to make any deduction from the amount payable to the holder of such depositary receipt from any amount received by the custodian in respect of the Governmental Obligation or the specific payment of principal of or interest on the Governmental Obligation evidenced by such depositary receipt.

For purposes of this description the term "*governmental obligations*" shall have the following meaning with respect to the Euro Notes: (x) any security which is (i) a direct obligation of the German government or (ii) an obligation of a Person controlled or supervised by and acting as an agency or instrumentality of the German government the payment of which is fully and unconditionally guaranteed by the German government, the central bank of the German government or a governmental agency of the German government, which, in either case (x)(i) or (ii), is not callable or redeemable at the option of the issuer thereof, and (y) certificates, depositary receipts or other instruments which evidence a direct ownership interest in obligations described in clause (x)(i) or (x)(ii) above or in any specific principal or interest payments due in respect thereof.

Defeasance and Discharge of Obligations

The Issuers' obligations with respect to the Notes will be discharged upon compliance with the conditions under the caption "*Covenant Defeasance*"; provided that the Issuers may not be discharged from the following obligations, which will survive until such date of maturity or the redemption date, as the case may be, for the Notes:

- to make any interest or principal payments that may be required with respect to the Notes;
- to register the transfer or exchange of the Notes;
- to execute and authenticate the Notes;
- to replace stolen, lost or mutilated Notes;
- to maintain an office or agency with respect to the Notes;
- to maintain paying agencies with respect to the Notes; and
- to appoint new trustees with respect to the Notes as required by the Indenture.

The Issuers also may not be discharged from the following obligations, which will survive the satisfaction and discharge of the Notes:

- to compensate and reimburse the Trustee in accordance with the terms of the Indenture;
- to receive unclaimed payments held by the Trustee for at least one year after the date upon which the principal, if any, or interest on the Notes shall have respectively come due and payable and remit those payments to the holders thereof if required; and
- to withhold or deduct taxes as provided in the Indenture.

Covenant Defeasance

Upon compliance with specified conditions, the Issuers may, at their option and at any time, by written notice executed by an Officer delivered to the Trustee, elect to have their obligations, to the extent applicable, under the covenants described under "*—Offer to Repurchase Upon Change of Control Triggering Event*" and "*—Certain Covenants*" above, and the operation of the Event of Default described in clause (3) of the first paragraph under the caption "*—Events of Default*" above, discharged with respect to all outstanding Notes of a series and the Indenture insofar as such Notes are concerned. For this purpose, such covenant defeasance means that, with respect to the outstanding Notes of a series, the Issuers may omit to comply with and shall have no liability in respect of any term, condition or limitation set forth in any such covenant, whether directly or indirectly, by reason of any reference in the Indenture to any such covenant or by reason of reference in any such covenant to any other provision of the Indenture or in any other document and such omission to comply shall not constitute a Default or an Event of Default relating to the Notes of such series. These conditions are:

- the Issuers irrevocably deposit in trust with the Trustee or, at the option of the Trustee, with a trustee satisfactory to the Trustee and the Issuers, as the case may be, under the terms of an irrevocable trust agreement in form and substance satisfactory to the Trustee, funds or governmental obligations or a combination thereof sufficient to pay principal of, premium, if any, and interest on the outstanding Notes of such series to maturity or redemption, as the case may be, and to pay all other amounts payable by it under the Indenture (provided that, with respect to any redemption of any Notes of a series that requires the payment of any premium, the amount deposited pursuant to this paragraph shall be sufficient for purposes of the Indenture to the extent that an amount is so deposited with the Trustee or paying agent, as applicable, equal to such premium on such Notes calculated as of the date of the notice of redemption, with any deficit on the redemption date only required to be deposited with the Trustee or paying agent, as applicable, on or prior to the redemption date), provided that (A) the trustee of the irrevocable trust shall have been irrevocably instructed to pay such funds or the proceeds of such governmental obligations to the Trustee and (B) the Trustee shall have been irrevocably instructed to apply such funds or the proceeds of such governmental obligations to the payment of such principal, premium, if any, and interest with respect to the Notes of such series;

- the Issuers deliver to the Trustee an Officer's Certificate stating that all conditions precedent specified herein relating to defeasance or covenant defeasance, as the case may be, have been complied with, and an Opinion of Counsel to the same effect;
- no Event of Default shall have occurred and be continuing, and no event which with notice or lapse of time or both would become such an Event of Default shall have occurred and be continuing, on the date of such deposit; and
- the Issuers shall have delivered to the Trustee an Opinion of Counsel (which, in the case of a defeasance, must be based on a change in law) or a ruling received from the U.S. Internal Revenue Service to the effect that the beneficial owners of the Notes of a series will not recognize income, gain or loss for U.S. federal income tax purposes as a result of the Issuers' exercise of such defeasance or covenant defeasance and will be subject to U.S. Federal income tax in the same amount and in the same manner and at the same times as would have been the case if such election had not been exercised.

Definitions

As used in the Notes and this "*Description of JCI plc and TFSCA Notes*," the following defined terms shall have the following meanings with respect to the Notes:

"*Affiliate*," with respect to any specified Person, means any other Person directly or indirectly controlling or controlled by or under direct or indirect common control with such specified Person. For the purposes of this definition, "*control*" when used with respect to any specified Person means the power to direct the management and policies of such Person, directly or indirectly, whether through ownership of voting securities, by contract or otherwise; and the terms "*controlling*" and "*controlled*" have meanings correlative to the foregoing.

"*Attributable Debt*," in connection with a Sale and Lease-Back Transaction, as of any particular time, means the aggregate of present values (discounted at a rate that, at the inception of the lease, represents the effective interest rate that the lessee would have incurred to borrow over a similar term the funds necessary to purchase the leased assets) of the obligations of JCI plc or any Restricted Subsidiary for net rental payments during the remaining term of the applicable lease, including any period for which such lease has been extended or, at the option of the lessor, may be extended. The term "*net rental payments*" under any lease of any period shall mean the sum of the rental and other payments required to be paid in such period by the lessee thereunder, not including any amounts required to be paid by such lessee, whether or not designated as rental or additional rental, on account of maintenance and repairs, reconstruction, insurance, taxes, assessments, water rates or similar charges required to be paid by such lessee thereunder or any amounts required to be paid by such lessee thereunder contingent upon the amount of sales, maintenance and repairs, reconstruction, insurance, taxes, assessments, water rates or similar charges.

"*Board of Directors*" means the Board of Directors of the Company or any duly authorized committee of such Board of Directors.

"*business day*" means any day other than a Saturday or Sunday, (1) that is not a day on which banking institutions in the City of New York or London are authorized or obligated by law, executive order or regulation to close and (2) on which the Trans-European Automated Real-time Gross Settlement Express Transfer System (the TARGET2 system), or any successor thereto, is open.

"*Change of Control*" means the occurrence of any of the following after the date of issuance of the Notes:

(1) the direct or indirect sale, lease, transfer, conveyance or other disposition (other than by way of merger or consolidation), in one or a series of related transactions, of all or substantially all of the Company's assets and the assets of its subsidiaries taken as a whole to any "person" or "group" (as those terms are used in

Section 13(d)(3) of the Exchange Act) other than to the Company or one of its subsidiaries, other than any such transaction or series of related transactions where holders of our Voting Stock outstanding immediately prior thereto hold Voting Stock of the transferee Person representing a majority of the voting power of the transferee Person's Voting Stock immediately after giving effect thereto;

(2) the consummation of any transaction (including, without limitation, any merger or consolidation) the result of which is that any "person" or "group" (as those terms are used in Section 13(d)(3) of the Exchange Act) (other than us or one of our subsidiaries) becomes the "beneficial owner" (as defined in Rules 13d-3 and 13d-5 under the Exchange Act), directly or indirectly, of the Company's Voting Stock representing a majority of the voting power of the Company's outstanding Voting Stock;

(3) the Company consolidates with, or merges with or into, any Person, or any Person consolidates with, or merges with or into, the Company, in any such event pursuant to a transaction in which any of the Company's outstanding Voting Stock or Voting Stock of such other Person is converted into or exchanged for cash, securities or other property, other than any such transaction where the Company's Voting Stock outstanding immediately prior to such transaction constitutes, or is converted into or exchanged for, Voting Stock representing a majority of the voting power of the Voting Stock of the surviving Person (or its parent) immediately after giving effect to such transaction; or

(4) the adoption by the Company's shareholders of a plan relating to our liquidation or dissolution.

Notwithstanding the foregoing, a transaction will not be deemed to involve a change of control under clause (2) above if (1) the Company becomes a direct or indirect wholly-owned subsidiary of a holding company or other Person and (2)(A) the direct or indirect holders of the Voting Stock of such holding company or other Person immediately following that transaction are substantially the same as the holders of the Company's Voting Stock immediately prior to that transaction or (B) immediately following that transaction no person (as that term is used in Section 13(d)(3) of the Exchange Act) (other than a holding company or other Person satisfying the requirements of this sentence) is the beneficial owner, directly or indirectly, of more than 50% of the Voting Stock of such holding company or other Person.

"*Change of Control Triggering Event*" means, with respect to the Notes of a series, such Notes cease to be rated Investment Grade by each of the Rating Agencies on any date during the period (the "*Trigger Period*") commencing 60 days prior to the first public announcement by us of any Change of Control (or pending Change of Control) and ending 60 days following consummation of such Change of Control (which Trigger Period will be extended following consummation of a Change of Control for so long as any of the Rating Agencies has publicly announced that it is considering a possible ratings downgrade or withdrawal). However, a Change of Control Triggering Event otherwise arising by virtue of a particular reduction in, or withdrawal of, rating shall not be deemed to have occurred in respect of a particular Change of Control (and thus shall not be deemed a Change of Control Triggering Event for purposes of the definition of Change of Control Triggering Event) if the Rating Agencies making the reduction in, or withdrawal of, rating to which this definition would otherwise apply do not announce or publicly confirm or inform the Trustee in writing at our request that the reduction or withdrawal was the result, in whole or in part, of any event or circumstance comprised of or arising as a result of, or in respect of, the applicable Change of Control (whether or not the applicable Change of Control shall have occurred at the time of the Change of Control Triggering Event). If a Rating Agency is not providing a rating for the Notes at the commencement of any Trigger Period, the Notes will be deemed to have ceased to be rated Investment Grade by such Rating Agency during that Trigger Period.

Notwithstanding the foregoing, no Change of Control Triggering Event will be deemed to have occurred in connection with any particular Change of Control unless and until such Change of Control has actually been consummated.

"*Consolidated Net Worth*" at any date means total assets less total liabilities, in each case appearing on the most recently prepared consolidated balance sheet of the Company and its subsidiaries as of the end of a fiscal quarter of the Company, prepared in accordance with United States generally accepted accounting principles as in effect on the date of the consolidated balance sheet.

“*Consolidated Tangible Assets*” at any date means total assets less all intangible assets appearing on the most recently prepared consolidated balance sheet of the Company and its subsidiaries as of the end of a fiscal quarter of the Company, prepared in accordance with United States generally accepted accounting principles as in effect on the date of the consolidated balance sheet.

“*Default*” means any event, act or condition that with notice or lapse of time, or both, would constitute an Event of Default.

“*Funded Indebtedness*” means any Indebtedness of the Company or any consolidated subsidiary maturing by its terms more than one year from the date of the determination thereof, including any Indebtedness renewable or extendable at the option of the obligor to a date later than one year from the date of the determination thereof.

“*Global Security*” means a security executed by the Issuers and delivered by the Trustee to the depositary or pursuant to the depositary’s instruction, all in accordance with the Indenture, which shall be registered in the name of the depositary or its nominee.

“*governmental obligations*” shall have the meaning ascribed to such term in the section “Satisfaction and Discharge of the Indenture” of this description.

“*Indebtedness*” means, without duplication, the principal amount (such amount being the face amount or, with respect to original issue discount bonds or zero coupon notes, bonds or debentures or similar securities, determined based on the accreted amount as of the date of the most recently prepared consolidated balance sheet of the Company and its subsidiaries as of the end of a fiscal quarter of the Company prepared in accordance with United States generally accepted accounting principles as in effect on the date of such consolidated balance sheet) of (i) all obligations for borrowed money, (ii) all obligations evidenced by debentures, notes or other similar instruments, (iii) all obligations in respect of letters of credit or bankers acceptances or similar instruments or reimbursement obligations with respect thereto (such instruments to constitute Indebtedness only to the extent that the outstanding reimbursement obligations in respect thereof are collateralized by cash or cash equivalents reflected as assets on a balance sheet prepared in accordance with United States generally accepted accounting principles), (iv) all obligations to pay the deferred purchase price of property or services, except (A) trade and similar accounts payable and accrued expenses, (B) employee compensation, deferred compensation and pension obligations, and other obligations arising from employee benefit programs and agreements or other similar employment arrangements, (C) obligations in respect of customer advances received and (D) obligations in connection with earnout and holdback agreements, in each case in the ordinary course of business, (v) all obligations as lessee to the extent capitalized in accordance with United States generally accepted accounting principles and (vi) all Indebtedness of others consolidated in such balance sheet that is guaranteed by JCI plc or any of its subsidiaries or for which JCI plc or any of its subsidiaries is legally responsible or liable (whether by agreement to purchase indebtedness of, or to supply funds or to invest in, others).

“*Intangible assets*” means the amount, if any, stated under the headings “*Goodwill*” and “*Other intangible assets, net*” or under any other heading of intangible assets separately listed, in each case on the face of the most recently prepared consolidated balance sheet of the Company and its subsidiaries as of the end of a fiscal quarter of JCI plc, prepared in accordance with United States generally accepted accounting principles as in effect on the date of the consolidated balance sheet.

“*Investment Grade*” means a rating of Baa3 or better by Moody’s (or its equivalent under any successor rating category of Moody’s) and a rating of BBB– or better by S&P (or its equivalent under any successor rating category of S&P), and the equivalent investment grade credit rating from any replacement rating agency or rating agencies selected by us under the circumstances permitting us to select a replacement rating agency and in the manner for selecting a replacement rating agency, in each case as set forth in the definition of “*Rating Agency*.”

“*Moody’s*” means Moody’s Investors Service, Inc., a subsidiary of Moody’s Corporation, and its successors.
“*Officer*” means any manager, director, any managing director, the chairman or any vice chairman of the Board of Directors or a board of managers, as applicable, the chief executive officer, the president, the chief financial officer,

any vice president, the treasurer, any assistant treasurer, the secretary or any assistant secretary, or any equivalent of the foregoing, of the Company or the Co-Issuer, as applicable, or any Person duly authorized to act for or on behalf of the Company or the Co-Issuer, as applicable.

"*Officer's Certificate*" means a certificate, signed by any Officer of JCI plc and/or the Co-Issuer, as the case may be, that is delivered to the Trustee in accordance with the terms of the Indenture.

"*Opinion of Counsel*" means a written opinion acceptable to the Trustee from legal counsel licensed in any State of the United States of America and applying the laws of such State. The counsel may be an employee of or counsel to either Issuer.

"*Person*" means any individual, corporation, partnership, limited liability company, business trust, association, joint-stock company, joint venture, trust, incorporated or unincorporated organization or government or any agency or political subdivision thereof.

"*Principal Property*" means any manufacturing, processing or assembly plant or any warehouse or distribution facility, or any office or parcel of real property (including fixtures but excluding leases and other contract rights which might otherwise be deemed real property) of JCI plc or any of its subsidiaries that is used by any U.S. Subsidiary of JCI plc and is located in the United States of America (excluding its territories and possessions and Puerto Rico) and (A) is owned by JCI plc or any subsidiary of JCI plc on the date the Notes are issued, (B) the initial construction of which has been completed after the date on which the Notes are issued, or (C) is acquired after the date on which the Notes are issued, in each case, other than any such plants, facilities, warehouses or portions thereof, that in the opinion of the Board of Directors of JCI plc, are not collectively of material importance to the total business conducted by JCI plc and its subsidiaries as an entirety, or that have a net book value (excluding any capitalized interest expense), on the date the Notes are issued in the case of clause (A) of this definition, on the date of completion of the initial construction in the case of clause (B) of this definition or on the date of acquisition in the case of clause (C) of this definition, of less than 2.0% of Consolidated Tangible Assets on the consolidated balance sheet of JCI plc and its subsidiaries as of the applicable date.

"*Rating Agency*" means each of Moody's and S&P; provided, that if any of Moody's or S&P ceases to provide rating services to issuers or investors, we may appoint another "nationally recognized statistical rating organization" as defined under Section 3(a)(62) of the Exchange Act as a replacement for such Rating Agency; provided, that we shall give notice of such appointment to the Trustee.

"*Restricted Subsidiary*" means any subsidiary of JCI plc that owns or leases a Principal Property.

"*Sale and Lease-Back Transaction*" means an arrangement with any Person providing for the leasing by JCI plc or a Restricted Subsidiary of any Principal Property whereby such Principal Property has been or is to be sold or transferred by JCI plc or a Restricted Subsidiary to such Person other than JCI plc or any of its subsidiaries; provided, however, that the foregoing shall not apply to any such arrangement involving a lease for a term, including renewal rights, for not more than three years.

"*S&P*" means Standard & Poor's Global Ratings, a division of S&P Global Inc., and its successors.

"*Trust Officer*" means any officer within the corporate trust department of the Trustee, including any vice president, senior associate, associate, trust officer or any other officer of the Trustee who customarily performs functions similar to those performed by the Persons who at the time shall be such officers, respectively, or to whom any corporate trust matter is referred because of such Person's knowledge of and familiarity with the particular subject and who shall have direct responsibility for the administration of the Indenture.

"*U.S. Subsidiary*" means any subsidiary of JCI plc that was formed under the laws of the United States of America, any State thereof or the District of Columbia (but not any territory thereof).

"*Voting Stock*" of any specified Person as of any date means the capital stock of such Person that is at the time entitled to vote generally in the election of the board of directors of such Person.

JOHNSON CONTROLS INTERNATIONAL PLC
2021 EQUITY AND INCENTIVE PLAN (THE "PLAN")
RESTRICTED SHARE OR RESTRICTED SHARE UNIT AWARD AGREEMENT

Terms for Award of Restricted Shares and Restricted Share Units

Definitions. Certain capitalized terms used in this Award Agreement have the meanings set forth below. Other capitalized terms used but not defined in this Award Agreement have the same meaning as in the Plan.

(a) "Award" means this grant of Restricted Shares and/or Restricted Share Units.
(b) "Award Notice" means the Award notification delivered or made available to the Participant (in either paper or electronic form).
(c) "Cause" means (i) the Participant's conviction of or plea of guilty or nolo contendere to a crime that constitutes a felony, or a lesser crime involving moral turpitude (which, for the avoidance of doubt, shall exclude any routine traffic violations); (ii) the Participant's commission of any act that would rise to the level of a felony or the commission of a lesser crime or offense that materially and adversely impacts the business or reputation of the Company or its Affiliates; (iii) the Participant's commission of a dishonest or wrongful act involving fraud, embezzlement or misappropriation, whether or not related to the Participant's employment with the Company; (iv) the Participant's gross misconduct or commission of an act of moral turpitude that adversely and materially impacts the business or reputation of the Company or its Affiliates; (v) the Participant's willful failure to comply with any reasonable, valid and lawful directive; or (vi) the Participant's violation of a known and material policy of the Company. The Participant's employment shall not be deemed terminated for Cause for purposes of this Award unless the Company or one of its Affiliates has provided written notice to the Participant of the existence of the circumstances providing grounds for termination for Cause and the Participant has had at least ten (10) days from the date on which such notice is provided to cure such circumstances (to the extent such circumstances are capable of being cured).
(d) "Inimical Conduct" means any act or omission that is inimical to the best interests of the Company or any Affiliate as determined by the Committee in its sole discretion, including but not limited to: (i) violation of any employment, non-competition, non-solicitation, confidentiality or other agreement in effect with the Company or any Affiliate, (ii) taking any steps or doing anything which would damage or negatively reflect on the reputation of the Company or an Affiliate, or (iii) failure to comply with applicable laws relating to trade secrets, confidential information or unfair competition.
(e) "Plan" means the Johnson Controls International plc 2021 Equity and Incentive Plan as amended from time to time.
(f) "Restriction Period" means the length of time indicated in the Award Notice during which the Award is subject to vesting. During the Restriction Period, the Participant cannot sell, transfer, pledge, assign or otherwise encumber the Restricted Shares or Restricted Share Units (or a portion thereof) subject to this Award.
(g) "Restricted Share" means a Share that is subject to a risk of forfeiture and the Restriction Period.
(h) "Restricted Share Unit" means the right to receive one Share or a cash payment equal to the Fair Market Value of one Share, that is subject to a risk of forfeiture and the Restriction Period.
(i) "Retirement" means Termination of Employment (for other than Cause) on or after attainment of age fifty-five (55) and completion of five (5) years of continuous service with the Company and its Affiliates (including, for Participants who are Legacy Johnson Controls Employees, service with Johnson Controls, Inc. and its affiliates prior to the Merger).
(j) "Termination of Employment" means, subject to the terms of any Attachment hereto, the date of cessation of the Participant's employment relationship with the Company and its Affiliates for any reason, with or without Cause, as determined by the Company.

The parties agree as follows:

1. **Grant of Award**. Subject to the terms and conditions of the Plan, a copy of which has been delivered to the Participant and made a part of this Award, and to the terms and conditions of this Award Agreement, the Company grants to the Participant an award of Restricted Shares or Restricted Share Units, as specified in the Award Notice, on the date and with respect to the number of Shares specified in the Award Notice.

2. **Restricted Shares**. If the Award is in the form of Restricted Shares, the Shares are subject to the following terms:

   a. Restriction Period**.** The Company will hold the Shares in escrow for the Restriction Period. During this period, the Shares shall be subject to forfeiture as provided in Section 4.

   b. Removal of Restrictions. Subject to any applicable deferral election under the Johnson Controls International plc Senior Executive Deferred Compensation Plan (or any successor or similar deferred compensation plan for which the Participant is eligible) and to Section 4 below, Shares that have not been forfeited shall become available to the Participant after the last day of the Restriction Period upon payment in full of all taxes due with respect to such Shares.

   c. Voting Rights. During the Restriction Period, the Participant may exercise full voting rights with respect to the Shares.

   d. Dividends and Other Distributions. Any cash dividends or other distributions paid or delivered with respect to Restricted Shares for which the record date occurs on or before the last day of the Restriction Period will be credited to a bookkeeping account for the benefit of the Participant. For U.S. domestic Participants, the account will be converted into and settled in additional Shares issued under the Plan at the end of the applicable Restriction Period; for all other Participants, the account will be paid to the Participant in cash at the end of the applicable Restriction Period. Prior to the end of the Restriction Period, such account will be subject to the same terms and conditions (including risk of forfeiture) as the Restricted Shares to which the dividends or other distributions relate.

3. **Restricted Share Units.** If the Award is in the form of Restricted Share Units**,** the Restricted Share Units are subject to the following terms:

   a. Restriction Period. During the Restriction Period, the Restricted Share Units shall be subject to forfeiture as provided in Section 4.

   b. Settlement of Restricted Share Units. Subject to any applicable deferral election under the Johnson Controls International plc Senior Executive Deferred Compensation Plan (or any successor or similar deferred compensation plan for which the Participant is eligible) and to Section 4 and Section 5 below, the Restricted Share Units shall be settled by, (a) for U.S. and United Kingdom domestic Participants, the Company's issuance of a number of Shares to the Participant equal to the number of whole Units that have been earned; or (b) for all other Participants, payment of a cash sum to the Participant by the local entity equal to the Fair Market Value of one Share (determined as of the vesting date) multiplied by the number of whole Units that have been earned. The Shares or the cash payment shall be issued or paid in each case within forty-five (45) days after the last day of the Restriction Period (subject to a six-month delay to the extent required to comply with Code Section 409A).

   c. Dividend Equivalent Units. Any cash dividends or other distributions paid or delivered with respect to the Shares for which the record date occurs on or before the last day of the Restriction Period will result in a credit to a bookkeeping account for the benefit of the Participant. The credit will be equal to the dividends or other distributions that would have been paid with respect to the Shares subject to the Restricted Share Units had such Shares been outstanding. For U.S. and United Kingdom domestic Participants, the account will be converted into and settled in additional Shares issued under the Plan at the end of the applicable

Restriction Period; for all other Participants, the account will be paid to the Participant in cash or, at the discretion of the Company, converted into and settled in additional Shares issued under the Plan at the end of the applicable Restriction Period. Prior to the end of the Restriction Period, such account will be subject to the same terms and conditions (including risk of forfeiture) as the Restricted Share Units to which the dividends or other distributions relate.

4. **Termination of Employment – Risk of Forfeiture.**

a. Retirement. If the Participant terminates employment from the Company and its Affiliates due to Retirement at a time when the Participant's employment could not have been terminated for Cause, then the Participant shall become vested in, and the Restriction Period shall lapse with respect to, a pro rata portion of the total number of Restricted Shares or Restricted Share Units subject to this Award. Such pro rata portion that shall vest upon Retirement shall be calculated as follows: (i) the total number of Restricted Shares or Restricted Share Units granted under this Award multiplied by (ii) a fraction, the numerator of which equals the total number of full months that the Participant was employed during the Restriction Period as of the Participant's Termination of Employment and the denominator of which equals the total number of months in the Restriction Period, less (iii) any Restricted Shares or Restricted Share Units that previously vested in the normal course as of the Participant's Termination of Employment. Any Restricted Shares or Restricted Share Units subject to this Award that do not become vested under this paragraph upon the Participant's Retirement shall automatically be forfeited and returned to the Company as of the date of his Retirement.

b. Involuntary Termination Without Cause. If the Participant's employment with the Company and its Affiliates is terminated by the Company without Cause, then the Participant shall become vested in, and the Restriction Period shall lapse with respect to a pro rata portion of the total number of Restricted Shares or Restricted Share Units subject to this Award. Such pro rata portion that shall vest upon the Participant's Termination of Employment shall be calculated as follows: (i) the total number of Restricted Shares or Restricted Share Units granted under this Award multiplied by (ii) a fraction, the numerator of which equals the total number of full months that the Participant was employed during the Restriction Period as of the Participant's Termination of Employment and the denominator of which equals the total number of months in the Restriction Period, less (iii) any Restricted Shares or Restricted Share Units that previously vested in the normal course as of the Participant's Termination of Employment. Any Restricted Shares or Restricted Share Units subject to this Award that do not become vested under this paragraph upon the Participant's termination without Cause shall automatically be forfeited and returned to the Company as of the Participant's Termination of Employment.

c. Death. If the Participant's employment with the Company and its Affiliates terminates because of death at a time when the Participant could not have been terminated for Cause, then, effective as of the date the Company determines the Participant's employment terminated due to death (provided such determination is made no later than the end of the calendar year following the calendar year in which death occurs), the Participant shall become fully vested in all of the Restricted Shares or Restricted Share Units subject to this Award and any remaining Restriction Period shall automatically lapse.

d. Disability. If the Participant's employment with the Company and its Affiliates terminates because of Disability at a time when the Participant could not have been terminated for Cause, then the Participant shall become fully vested in all of the Restricted Shares or Restricted Share Units subject to this Award and any remaining Restriction Period shall automatically lapse as of the date of such Termination of Employment.

e. Divestiture or Outsourcing. If the Participant's employment with the Company and its Affiliates terminates as a result of a Disposition of Assets, Disposition of a Subsidiary or Outsourcing Agreement (each as defined below), at a time when the Participant could not have been terminated for Cause, then the Participant shall become vested in a pro rata portion of the total number of Restricted Shares or Restricted Share Units subject to this Award. Such pro rata portion shall be calculated as follows: (i) the total number of Restricted Shares or Restricted Share Units granted under this Award multiplied by (ii) a fraction, the numerator of which equals the total number of full months that the Participant was employed during the Restriction Period as of the Participant's Termination of Employment and the denominator of which equals the total number of months in the Restriction Period, less (iii) any Restricted Shares or Restricted Share

Units that previously vested in the normal course as of the Participant's Termination of Employment; provided that, if such Termination of Employment does not constitute a "separation from service" within the meaning of Code Section 409A, then any remaining Restriction Period shall continue with respect to the vested Shares or Restricted Share Units as if the Participant continued in active employment to the extent required for compliance with Code Section 409A. Any Restricted Shares or Restricted Share Units subject to this Award that do not become vested under this paragraph as a result of such Disposition of Assets, Disposition of a Subsidiary or Outsourcing Agreement shall automatically be forfeited and returned to the Company as of the date of the Disposition of Assets, Disposition of a Subsidiary or Outsourcing Agreement, as applicable. Notwithstanding the foregoing, the Participant shall not be eligible for such pro rata vesting if (A) the Participant's Termination of Employment occurs on or prior to the closing date of such Disposition of Assets or Disposition of a Subsidiary, as applicable, or on such later date as is specifically provided in the applicable transaction agreement or related agreements, or on the effective date of such Outsourcing Agreement applicable to the Participant (the "Applicable Employment Date"), and (B) the Participant is offered Comparable Employment (as defined below) with the buyer, successor company or outsourcing agent, as applicable, but does not commence such employment on the Applicable Employment Date.

For purposes of this Section 4(d), "Comparable Employment" shall mean employment (x) with base compensation and benefits (not including perquisites, allowances or long term incentive compensation) that, taken as whole, is not materially reduced from that which is in effect immediately prior to the Participant's Termination of Employment and (y) that is at a geographic location no more than 50 miles from the Participant's principal place of employment in effect immediately prior to the Participant's Termination of Employment; "Disposition of Assets" shall mean the disposition by the Company or an Affiliate by which the Participant is employed of all or a portion of the assets used by the Company or Affiliate in a trade or business to an unrelated corporation or entity; "Disposition of a Subsidiary" shall mean the disposition by the Company or an Affiliate of its interest in a subsidiary or controlled entity to an unrelated individual or entity (which, for the avoidance of doubt, excludes a spin-off or split-off or similar transaction), provided that such subsidiary or entity ceases to be controlled by the Company as a result of such disposition; and "Outsourcing Agreement" shall mean a written agreement between the Company or an Affiliate and an unrelated third party ("Outsourcing Agent") pursuant to which (i) the Company transfers the performance of services previously performed by employees of the Company or Affiliate to the Outsourcing Agent, and (ii) the Outsourcing Agent is obligated to offer employment to any employee whose employment is being terminated as a result of or in connection with said Outsourcing Agreement.

f. Other Termination. If the Participant's employment terminates for any reason not described above (including for Cause), then any Restricted Shares or any Restricted Share Units (and all deferred dividends paid or credited thereon) still subject to the Restriction Period as of Participant's Termination of Employment shall automatically be forfeited and returned to the Company. The Company may suspend payment or delivery of Shares (without liability for interest thereon) pending the Committee's determination of whether the Participant was or should have been terminated for Cause.

5. **Inimical Conduct.** Notwithstanding anything herein to the contrary, if the Committee determines at any time that a Participant has engaged in Inimical Conduct, whether before or after Termination of Employment, the Award shall be cancelled, regardless of vesting. In addition, the Committee or the Company may suspend any vesting, payment of cash or issuance of Shares hereunder pending the determination of whether the Participant has engaged in Inimical Conduct.

6. **Change of Control.** This Award will be treated in accordance with Section 19 of the Plan in connection with a Change of Control.

7. **Withholding**. The Participant agrees to remit to the Company any foreign, Federal, state and/or local taxes (including the Participant's FICA tax obligation) required by law to be withheld with respect to the issuance of Shares under this Award, the vesting of this Award or the payment of cash under this Award. Notwithstanding anything to the contrary in this Award, if the Company or any Affiliate of the Company is required to withhold any Federal, state or local taxes or other amounts in connection with the Award, then the Company may require the Participant to pay to the Company, in cash, promptly on demand, amounts sufficient to satisfy such tax obligations or make other arrangements satisfactory to the Company regarding the payment to the Company of the aggregate amount of any such taxes and other amounts. Alternatively, the Company can withhold Shares no longer restricted, or can withhold from cash or property, including cash or Shares under

this Award, payable or issuable to the Participant, in the amount needed to satisfy any withholding obligations; provided that, to the extent Shares are withheld to satisfy taxes, the amount to be withheld may not exceed the total maximum statutory tax withholding obligations associated with the transaction. Notwithstanding the foregoing, with respect to a Participant who is a Section 16 Participant, if payment hereunder is to be made in the form of Shares, then any withholding obligations shall be satisfied by the Company withholding Shares otherwise issuable under this Award unless the Committee approves an alternative method by which the Participant shall pay such withholding taxes.

8. **No Claim for Forfeiture**. Neither the Award nor any benefit accruing to the Participant from the Award will be considered to be part of the Participant's normal or expected compensation or salary for any purposes, including, but not limited to, calculating any severance, resignation, termination, redundancy, dismissal, end-of-service payments, bonuses, long-service awards, pension or retirement or welfare benefits or similar payments. Notwithstanding anything to the contrary in this Award, in no event may the Award or any benefit accruing to the Participant from the Award be considered as compensation for, or relating in any way to, past services for the Company or any Affiliate. In consideration of the Award, no claim or entitlement to compensation or damages shall arise from forfeiture of the Award resulting from termination of the Participant's employment by the Company or any Affiliate (for any reason whatsoever and whether or not in breach of local labor laws) and the Participant irrevocably releases the Company and its Affiliates from any such claim that may arise. If, notwithstanding the foregoing, any such claim is found by a court of competent jurisdiction to have arisen, then, by acknowledging the grant, the Participant shall have been deemed irrevocably to have waived any entitlement to pursue such claim.

9. **Electronic Delivery**. The Company or its Affiliates may, in its or their sole discretion, decide to deliver any documents related to current or future participation in the Plan or related to this Award by electronic means. The Participant hereby consents to receive such documents by electronic delivery and agrees to participate in the Plan through an on-line or electronic system established and maintained by the Company or a third party designated by the Company. The Participant hereby agrees that all on-line acknowledgements shall have the same force and effect as a written signature.

10. **Securities Compliance.** The Company may place a legend or legends upon the certificates for Shares issued under the Plan and may issue "stop transfer" instructions to its transfer agent in respect of such Shares as it determines to be necessary or appropriate to (a) prevent a violation of, or to obtain an exemption from, the registration requirements of the Securities Act of 1933, as amended, applicable state or other country securities laws or other legal requirements, or (b) implement the provisions of the Plan, this Award or any other agreement between the Company and the Participant with respect to such Shares.

11. **Successors**. All obligations of the Company under this Award shall be binding on any successor to the Company. The terms of this Award and the Plan shall be binding upon and inure to the benefit of the Participant, and his or her heirs, executors, administrators or legal representatives.

12. **Legal Compliance**. The granting of this Award and the issuance of Shares under this Award shall be subject to all applicable laws, rules, and regulations and to such approvals by any governmental agencies or national securities exchanges as may be required.

13. **Governing Law; Arbitration**. This Award, and the interpretation of this Award Agreement, shall be governed by (a) the internal laws of Ireland (without reference to conflict of law principles thereof that would direct the application of the laws of another jurisdiction) with respect to the validity and authorization of any Shares issued under this Award, and (b) the internal laws of the State of Wisconsin (without reference to conflict of law principles thereof that would direct the application of the laws of another jurisdiction) with respect to all other matters. Any disputes regarding this Award or any other matter relating to the Participant's employment will be subject to the Company's arbitration policy, as described in Section 20(i) of the Plan.

14. **Data Privacy and Sharing**. As a requirement of the Award, it is necessary for some of the Participant's personal identifiable information to be provided to certain employees of the Company, the third party data processor that administers the Plan and the Company's designated third party broker in the United States. These transfers will be made pursuant to a contract that requires the processor to provide adequate levels of protection for data privacy and security interests and in accordance with the "legitimate interest" provisions of the EU General Data Protection Regulation (GDPR) (Regulation (EU) 2016/679 and the implementing

legislation of the Participant’s home country (or any successor or superseding regulation). By acknowledging the Award, the Participant acknowledges having been informed of the processing of the Participant’s personal identifiable information described in the preceding paragraph and consents to the Company collecting and transferring to the Company's Shareholder Services Department, and its independent benefit plan administrator and third party broker, the Participant’s personal data that are necessary to administer the Award and the Plan. The Participant understands that his or her personal information may be transferred, processed and stored outside of the Participant’s home country in a country that may not have the same data protection laws as his or her home country, for the purposes mentioned in this Award.

In compliance with the GDPR the Participant will be provided with:

- the identity and the contact details of the controller (usually the administrator and/or the Company) and, where applicable, of the controller's representative;
- the contact details of the data protection officer, where applicable;
- that the purposes of the processing of personal data is for the grant, administration and vesting of the Award and the legal basis for the processing is that this is required for the performance of this Award Agreement and for compliance with its terms and the Award or to cover the legitimate interests of the data controller and the data processor;
- the recipients or categories of recipients of the personal data, if any;
- the controller intends to transfer personal data to a third country or international organization subject to the existence of an adequacy decision by the Commission, or reference to the appropriate or suitable safeguards (reliance on the US/EU Privacy Shield or adoption of the EU Model Clauses) and you may obtain a copy of these or details of where they are made available on the administrator’s portal;
- the period for which the personal data will be stored, or if that is not possible, the criteria used to determine that period;
- the right to request from the controller access to and rectification or erasure, in certain circumstances but this could impact the Award, of personal data or restriction of processing concerning the data subject or to object to processing as well as the right to data portability;
- the right to lodge a complaint with a supervisory authority;
- the provision of personal data is a requirement for the performance of this Award Agreement and the terms of the Award.

15. **Restrictive Covenants.** In consideration for the Participant’s opportunity to earn the benefits provided in this Award Agreement, Participant agrees to be bound by the restrictive covenants in Attachment A. For the sake of clarity, by accepting this Award, Participant agrees to be bound by such restrictive covenants even if Participant ultimately forfeits this Award or otherwise fails to receive any benefits under this Award Agreement.

16. **Recoupment.** This Award, and any Shares issued or cash paid pursuant to this Award, shall be subject to the Company’s Executive Compensation Incentive Recoupment Policy.

17. **No Restrictions on Certain Actions.** The existence of the Award shall not affect in any way the right or power of the Company or its shareholders to make or authorize any or all adjustments, recapitalizations, reorganizations, or other changes in the Company's capital structure or its business, or any merger or consolidation of the Company, or any issuance of bonds, debentures, preferred, or prior preference shares ahead of or affecting the Shares or the rights thereof, or dissolution or liquidation of the Company, or any sale or transfer of all or any part of its assets or business, or any other corporate act or proceeding, whether of a similar character or otherwise.

This Award Agreement, the Award Notice and any other documents expressly referenced in this Award Agreement contain all of the provisions applicable to the Award and no other statements, documents or practices may modify, waive or alter such provisions unless expressly set forth in writing, signed by an authorized officer of the Company and delivered to the Participant.

Failure of the Participant to affirmatively ACKNOWLEDGE or reject this Award within the sixty (60) day period following the date of grant will result in the Participant's IMMEDIATE AND AUTOMATIC acceptance of this Award and the terms and conditions of the Plan and this Award Agreement, including the non-competition and non-solicitation provisions contained herein.

The Company has caused this Award to be executed by one of its authorized officers as of the date of grant.

JOHNSON CONTROLS INTERNATIONAL PLC

/s/ John Donofrio
John Donofrio
Executive Vice President and General Counsel

Attachment A
Johnson Controls International plc
Restrictive Covenants for Award Agreements

In consideration for the Participant's opportunity to earn the benefits provided in this Award Agreement (regardless of whether benefits under this Award Agreement are actually realized by the Participant), and except as prohibited by law, the Participant agrees as follows:

1. **Non-Competition**. Participant agrees that during his or her employment with the Company or its Subsidiaries, and for the period of one (1) year following the Participant's Termination of Employment for any reason, or such longer period of non-competition as is included in any offer letter or any other agreement between Participant and the Company or its Subsidiaries or Affiliates, the Participant will not directly or indirectly, own, manage, operate, control (including indirectly through a debt, equity investment, or otherwise), provide services to, or be employed by, any person or entity engaged in any business that (i) conducts or is planning to conduct a business in competition with any business conducted or planned by the Company or any of its Subsidiaries (1) that is located in a region in which Participant had substantial responsibilities during the twenty-four (24) month period preceding Participant's Termination of Employment, and (2) for which Participant (A) was materially involved in during the twenty-four (24) month period preceding Participant's Termination of Employment, or (B) had knowledge of operations or substantial exposure to during the twenty-four (24) month period preceding Participant's Termination of Employment; or (ii) designs, develops, produces, offers for sale or sells a product or service that can be used as a substitute for, or is generally intended to satisfy the same customer needs for, any one or more products or services designed, developed, manufactured, produced or offered for sale or sold by any of the Company's business (1) that is located in a region in which Participant had substantial responsibilities during the twenty-four (24) month period preceding Participant's Termination of Employment, and (2) for which Participant (A) was materially involved in during the twenty-four (24) month period preceding Participant's Termination of Employment, or (B) had knowledge of operations or substantial exposure to during the twenty-four (24) month period preceding Participant's Termination of Employment.

2. **Non-Solicitation of Customers**. Participant agrees that during his or her employment with the Company or its Subsidiaries, and for the period of two (2) years following the Participant's Termination of Employment for any reason, or such longer period of non-solicitation as is included in any offer letter or any other agreement between Participant and the Company or its Subsidiaries or Affiliates, the Participant will not, directly or indirectly, on his or her own behalf or on behalf of another (i) solicit, aid or induce any customer of the Company or any of its Subsidiaries that Participant was responsible for, including supervised, managed or directed by Participant, to purchase goods or services then sold by the Company or its Subsidiaries from another person or entity, or assist or aid any other person or entity in identifying or soliciting any such customer, or (ii) solicit, aid or induce any customer that was pursued by the Company and with which Participant had contact, participated in the contact, or about which Participant had knowledge of Confidential Information by reason of Participant's relationship with the Company within the twenty-four (24) month period preceding Participant's Termination of Employment if that sale or service would be located in a region with respect to which the Participant had substantial responsibilities while employed by the Company or its Subsidiaries.

3. **Non-Solicitation of Employees**. Participant agrees that during his or her employment with the Company or its Subsidiaries, and for the period of two (2) years following the Participant's Termination of Employment for any reason, or such longer period of non-solicitation as is included in any offer letter or any other agreement between Participant and the Company or its Subsidiaries or Affiliates, the Participant will not, directly or indirectly, on his or her own behalf or on behalf of another solicit, recruit, aid or induce employees of the Company or any of its Subsidiaries (a) with whom Participant has had material contact with during the twelve (12) months period preceding Participant's Termination of Employment and who had access to Confidential Information, trade secrets or customer relationships; or (b) who were directly managed by or reported to Participant as of the date of Participant's Termination of Employment to leave their employment with the Company or its Subsidiaries in order to accept employment with or render services to another person or entity unaffiliated with the Company or its Subsidiaries, or hire or knowingly take any action to assist or aid any other person or entity in identifying or hiring any such employee.

4. **Confidentiality**. In consideration for the Participant's opportunity to earn the benefits provided in this Award Agreement (regardless of whether benefits under this Award Agreement are actually realized by the Participant) and for the Company's and its Subsidiaries' promise to provide Participant with confidential and competitively sensitive information from time to time concerning, among other things, the Company and its Subsidiaries strategies, objectives, performance and business prospects, the Participant agrees that during his or her employment with the Company or its Subsidiaries, and until such time thereafter as the Confidential Information is no longer confidential through no fault of the Participant, the Participant shall not use or disclose any Confidential Information except for the benefit of the Company or its Subsidiaries in the course of the Participant's employment, and shall not use or disclose any Confidential Information in competition with or to the detriment of the Company or its Subsidiaries, or for the benefit of the Participant or anyone else other than the Company or its Subsidiaries. Notwithstanding the foregoing, nothing herein shall prohibit the Participant from reporting or otherwise disclosing possible violations of state, local or federal law or regulation to any governmental agency or entity, or making other disclosures that, in each case, are protected under whistleblower provisions of local, state or federal law or regulation. Nothing in this Agreement is intended to discourage or restrict Employee from reporting any theft of trade secrets pursuant to the Defend Trade Secrets Act of 2016 ("DTSA") or other applicable state or federal law. The DTSA provides: An individual shall not be held criminally or civilly liable under any federal or state trade secret law for the disclosure of a trade secret that: (a) is made (i) in confidence to a federal, state or local government official, either directly or indirectly, or to any attorney; and (ii) solely for the purpose of reporting or investigating a suspected violation or law; or (b) is made in a complaint or other document filed in a lawsuit or other proceeding, if such filing is made under seal. An individual who files a lawsuit for retaliation by an employer for reporting a suspected violation of law may disclose the trade secret to an attorney for the individual and use the trade secret information in the court proceeding, if the individual (a) files any document containing the trade secret under seal; and (b) does not disclose the trade secret, except pursuant to court order.

"Confidential Information" means any information that is not generally known outside the Company and its Subsidiaries, relating to any phase of business of the Company or any Affiliate, whether existing or foreseeable, including information conceived, discovered or developed by the Participant. Confidential Information includes, but is not limited to: project files, product designs, drawings, sketches and processes; production characteristics; testing procedures and results thereof; manufacturing methods, processes, techniques and test results; plant layouts, tooling, engineering evaluations and reports; business plans, financial statements and projections; operating forms (including contracts) and procedures; payroll and personnel records; non-public marketing materials, plans and proposals; customer lists and information, and target lists for new clients and information relating to potential clients; software codes and computer programs; training manuals; policy and procedure manuals; raw materials sources, price and cost information; administrative techniques and documents; and any information received by the Company under an obligation of confidentiality to a third party.

5. **Non-Disparagement**. Each of the Participant and the Company and its Affiliates (for purposes hereof, the Company and its Subsidiaries shall mean only the officers and directors thereof and not any other employees) agrees not to make any statements that disparage the other party, or in the case of the Company or its Subsidiaries, their respective Subsidiaries, employees, officers, directors, products or services. Notwithstanding the foregoing, statements made in the course of sworn testimony in administrative, judicial or arbitral proceedings (including, without limitation, depositions in connection with such proceedings) shall not be subject to the limitations in this paragraph.

6. **Remedies**. Irreparable injury will result to the Company, and to its business, in the event of a breach by the Participant of any of the Participant's covenants and commitments under this Award, including the covenants of non-competition and non-solicitation. Therefore, in the event of a breach of such covenants and commitments, in the sole discretion of the Company, any of the Participant's unvested Restricted Shares or Restricted Share Units shall be immediately rescinded and the Participant will forfeit any rights he or she has with respect thereto. Furthermore, by acknowledging this Award, and not declining the Award, in the event of such a breach, upon demand by the Company, the Participant hereby agrees and promises immediately to deliver to the Company the number of Shares (or, in the discretion of the Company, the cash value of said Shares) the Participant received for Restricted Share Units that vested or were delivered at any time from and after the earlier of (i) the date of

the breach or (ii) six months prior to the Participant's Termination of Employment. In the event the Shares subject to repayment are, at the time of the Company's demand, allocated to a deferred compensation plan, the Company may forfeit such Shares and the Participant will forfeit any rights he or she has with respect thereto. In addition, the Company reserves all rights to seek any and all remedies and damages permitted under law, including, but not limited to, injunctive relief, equitable relief and compensatory damages. The Participant further acknowledges and confirms that the terms of this Attachment, including but not limited to the time and geographic restrictions, are reasonable, fair, just and enforceable by a court.

EXHIBIT 21.1

JOHNSON CONTROLS INTERNATIONAL PLC

The following is a list of significant subsidiaries of Johnson Controls International plc, as defined by Section 1.02(w) of Regulation S-X, as of September 30, 2022.

Name of Company	**Jurisdiction Where Subsidiary is Incorporated**
Johnson Controls Security Solutions LLC	Delaware, United States
Johnson Controls, Inc.	Wisconsin, United States

Exhibit 22.1

Co-Issuer of Debt Securities

Tyco Fire & Security Finance S.C.A., a subsidiary of Johnson Controls International plc (the “Company”), co-issued with the Company the debt securities listed below:

1.750% Senior Notes due 2030

0.375% Senior Notes due 2027

1.000% Senior Notes due 2032

2.000% Sustainability-Linked Senior Notes due 2031

3.000% Senior Notes due 2028

4.900% Senior Notes due 2032

EXHIBIT 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Registration Statements on Form S-3 (Nos. 333-236195 and 333-236195-01) and S-8 (Nos. 333-254239, 333-226258, 333-213508, 333-200320 and 333-185004) and Post-Effective Amendment to Registration Statement Form S-4 on Form S-8 (No. 333-210588) of Johnson Controls International plc of our report dated November 15, 2022 relating to the financial statements and financial statement schedule and the effectiveness of internal control over financial reporting, which appears in this Form 10-K.

/s/ PricewaterhouseCoopers LLP
Milwaukee, Wisconsin
November 15, 2022

EXHIBIT 31.1

CERTIFICATIONS

I, George R. Oliver, of Johnson Controls International plc, certify that:

1. I have reviewed this annual report on Form 10-K of Johnson Controls International plc;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

    a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

    b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

    c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

    d. Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of registrant's board of directors (or persons performing the equivalent functions):

    a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

    b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: November 15, 2022

/s/ George R. Oliver

George R. Oliver
Chairman and Chief Executive Officer

EXHIBIT 31.2

CERTIFICATIONS

I, Olivier Leonetti, of Johnson Controls International plc, certify that:

1. I have reviewed this annual report on Form 10-K of Johnson Controls International plc;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

    a. Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

    b. Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

    c. Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

    d. Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of registrant's board of directors (or persons performing the equivalent functions):

    a. All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

    b. Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: November 15, 2022

/s/ Olivier Leonetti

Olivier Leonetti
Executive Vice President and
Chief Financial Officer

EXHIBIT 32.1

CERTIFICATION OF PERIODIC FINANCIAL REPORTS

We, George R. Oliver and Olivier Leonetti, of Johnson Controls International plc, certify, pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

1. the Annual Report on Form 10-K for the year ended September 30, 2022 (Periodic Report) to which this statement is an exhibit fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934 (15 U.S.C. 78m or 78o(d)) and

2. information contained in the Periodic Report fairly presents, in all material respects, the financial condition and results of operations of Johnson Controls International plc.

Date: November 15, 2022

/s/ George R. Oliver
George R. Oliver
Chairman and Chief Executive Officer

/s/ Olivier Leonetti
Olivier Leonetti
Executive Vice President and Chief Financial Officer