2019 Annual Report

Driven By Purpose

PENTAIR

Our Purpose

We believe that the health of our world depends on reliable access to clean, safe water.

Our Mission

Pentair delivers smart, sustainable solutions that empower our customers to make the most of life's essential resource.

Our Vision

To Be the Leading Residential and Commercial Water Treatment Company

Built through Empowered & Accountable Employees, Delivering With a Sense of Urgency for Customers & Shareholders.

United By Our Win Right Values

WIN	RIGHT
Customer First	Absolute Integrity
Innovation & Adaptability	Respect & Teamwork
Accountability for Performance	Positive Energy

Dear Fellow Shareholder,

Looking back at our first full year as a pure play water company, we are excited about the progress we made towards achieving our vision to be the leading residential and commercial water treatment company. Sustainability and general water awareness are increasing around the globe, and we are well positioned with a broad portfolio of smart, sustainable products and services to help solve many of the world's challenges regarding access to clean, safe, and great tasting water.

We had a tough start financially to 2019 and were impacted by wet weather and disruptions in our global supply chain. We ended the year achieving our revised expectations. In 2019, we continued to invest in our top priorities and built capability to provide a strong foundation to accelerate growth. We improved our overall capital structure throughout 2019 and ended the year with a strong balance sheet. We are also proud to continue our long legacy of returning capital to our shareholders. We announced earlier that 2020 marks the 44th consecutive year of dividend increases, which places Pentair in elite company as a dividend aristocrat.

Focus on Residential and Commercial Water Treatment

Building on the strengths of our leading pool franchise and our commercial and industrial filtration expertise, in 2019 we focused on raising Pentair's brand awareness with consumers to become the go-to company for solving residential and commercial water treatment needs. We closed and integrated two strategic acquisitions which moved us closer to the consumer, and we completed a segmentation analysis that helped us better position our products to align with our strategies and customer base. We made progress in our digital transformation journey through our website capabilities and delivered smart, IoT connected solutions.

New Product Development

We are proud of our new product innovation progress in 2019 as we benefit from investments in our Technology Innovation Centers. We are positioned to introduce a number of exciting new water treatment solutions over the next 12-18 months that will help make our world more sustainable and delight our customers. We developed the Pentair Pro App for our dealers and the Pentair Home App for the consumer; the latter will seamlessly connect an entire suite of soon-to-launch residential products. We believe the apps will create increased dealer loyalty by generating new sales leads as well as improved consumer loyalty through more easily attainable service offerings.

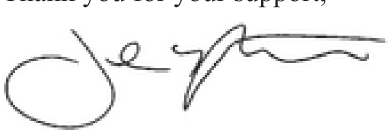
New Segments

We move into 2020 with great enthusiasm. Our businesses are organized into two new reporting segments - Consumer Solutions and Industrial & Flow Technologies. These segments are aligned around our product and service offerings by customer type to maximize the customer experience and drive profitable growth. The ultimate goal is to exceed the expectations of our customers and all other stakeholders.

Purpose Driven Organization

Looking forward, we believe our strategy is sound. We are excited for our future! We believe strongly in our purpose that "the health of the world depends on reliable access to clean, safe water." Our potential to make an impact on the world is significant.

Thank you for your support,



John L. Stauch

Pentair President and CEO

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 December 31, 2019

OR

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

Commission file number 001-11625

Pentair plc

(Exact name of Registrant as specified in its charter)

Ireland	**98-1141328**
(State or other jurisdiction of incorporation or organization)	*(I.R.S. Employer Identification number)*

Regal House, 70 London Road, Twickenham, London, TW13QS United Kingdom

(Address of principal executive offices)

Registrant's telephone number, including area code: 44-74-9421-6154

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Ordinary Shares, nominal value $0.01 per share	PNR	New York Stock Exchange

Securities registered pursuant to Section 12(g) of the Act: None

Indicate by check mark if 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 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 Securities Exchange Act of 1934 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 is a shell company (as defined in Rule 12b-2 of the Act). Yes ☐ No ☑

Aggregate market value of voting and non-voting common equity held by non-affiliates of the Registrant, based on the closing price of $37.20 per share as reported on the New York Stock Exchange on June 28, 2019 (the last business day of Registrant's most recently completed second quarter): $6,191,407,033.

The number of shares outstanding of Registrant's only class of common stock on December 31, 2019 was 168,293,375.

DOCUMENTS INCORPORATED BY REFERENCE

Parts of the Registrant's definitive proxy statement for its annual general meeting to be held on May 5, 2020, are incorporated by reference in this Form 10-K in response to Part III, ITEM 10, 11, 12, 13 and 14.

Pentair plc

Annual Report on Form 10-K
For the Year Ended December 31, 2019

PART I

ITEM 1. BUSINESS

GENERAL

At Pentair plc, we believe the health of our world depends on reliable access to clean, safe water. We deliver a comprehensive range of smart, sustainable water solutions to homes, business and industry around the world. Whether it's improving, moving or enjoying water, we help manage the world's most precious resource. Smart, Sustainable Water Solutions. For Life.

In 2019, Pentair plc was comprised of three reportable business segments: Aquatic Systems, Filtration Solutions and Flow Technologies. See below for further discussion of each of these segments.

Pentair strategy

Our vision is to be the leading residential and commercial water treatment company. As a pure play water company, we are:

- Focused on strategies to advance pool growth and accelerate residential and commercial water treatment;
- Accelerated by innovation and digital transformation; and
- Grounded in Win Right values and utilizing the Pentair Integrated Management System ("PIMS") consisting of lean enterprise, growth and talent management to drive sustained and consistent performance.

Unless the context otherwise indicates, references herein to "Pentair," the "Company," and such words as "we," "us," and "our" include Pentair plc and its consolidated subsidiaries. We are an Irish public limited company that was formed in 2014. We are the successor to Pentair Ltd., a Swiss corporation formed in 2012, and Pentair, Inc., a Minnesota corporation formed in 1966 and our wholly-owned subsidiary, under the Securities Exchange Act of 1934, as amended (the "Exchange Act"). Although our jurisdiction of organization is Ireland, we manage our affairs so that we are centrally managed and controlled in the United Kingdom (the "U.K.") and therefore have our tax residency in the U.K.

HISTORY AND DEVELOPMENT

On April 28, 2017, we completed the sale of the Valves & Controls business to Emerson Electric Co. for $3.15 billion in cash. The sale resulted in a gain of $181.1 million, net of tax. The results of the Valves & Controls business have been presented as discontinued operations. The Valves & Controls business was previously disclosed as a stand-alone reporting segment.

On April 30, 2018, Pentair completed the separation of its Electrical business from the rest of Pentair (the "Separation") by means of a dividend in specie of the Electrical business, which was effected by the transfer of the Electrical business from Pentair to nVent Electric plc ("nVent") and the issuance by nVent of ordinary shares directly to Pentair shareholders (the "Distribution"). On May 1, 2018, following the Separation and Distribution, nVent became an independent publicly traded company, trading on the New York Stock Exchange under the symbol "NVT." The Company did not retain any equity interest in nVent. nVent's historical financial results are reflected in the Company's consolidated financial statements as a discontinued operation. Refer to Note 2 for further discussion.

Our registered principal office is located at Regal House, 70 London Road, Twickenham, London, TW13QS United Kingdom. Our management office in the United States ("U.S.") is located at 5500 Wayzata Boulevard, Suite 900, Minneapolis, Minnesota.

BUSINESS AND PRODUCTS

The following is a brief description of each of the Company's 2019 reportable segments and business activities. Commencing with the first quarter of 2020 we revised our segments, going from three segments to two with the two revised segments named Consumer Solutions and Industrial & Flow Technologies. The discussions below that speak to historical periods refer to the prior segments, while statements about present and future periods refer to the businesses underlying those segments and carry forward with those businesses (including our customers, seasonality and competition) in their re-segmented form. Additional information regarding this re-segmentation is found below under the section titled "New Segmentation."

Aquatic Systems

The Aquatic Systems segment manufactures and sells a complete line of energy-efficient residential and commercial pool equipment and accessories including pumps, filters, heaters, lights, automatic controls, automatic cleaners, maintenance equipment and pool accessories. Applications for our Aquatic Systems products include residential and commercial pool maintenance, pool repair, renovation, service and construction solutions.

Brand names for Aquatic Systems include Kreepy Krauly, Pentair and Sta-Rite.

Customers

Aquatic Systems customers include businesses engaged in wholesale and retail distribution in the residential & commercial verticals. Customers in the residential & commercial verticals also include end-users and consumers. Pentair's verticals include residential, commercial, and industrial businesses.

One customer of the Aquatic Systems segment, Pool Corporation, represented approximately 15% of our consolidated net sales in 2019, 2018 and 2017.

Seasonality

We experience seasonal demand with several end customers and end-users within Aquatic Systems. End-user demand for pool equipment follows warm weather trends and is at season highs from April to August. The magnitude of the sales increase is mitigated by employing some advance sale "early buy" programs (generally including extended payment terms and/or additional discounts).

Competition

Aquatic Systems faces numerous domestic and international competitors, some of which have substantially greater resources directed to the verticals in which we compete. Competition focuses on brand names, product performance (including energy-efficient offerings and required specifications), quality, service and price. We compete by offering a wide variety of innovative and high-quality products, which are competitively priced. We believe our distribution channels and reputation for quality also provide us a competitive advantage.

Filtration Solutions

The Filtration Solutions segment designs, manufactures, markets and services innovative water solutions to meet filtration and separation challenges across residential, commercial, food & beverage and industrial applications.

Filtration Solutions offers a comprehensive product suite of components and systems that ranges from point-of-entry and point-of-use filtration, valves and automated controls for residential and commercial applications as well as advanced filtration, oil & gas separation, membrane technology, and energy recovery for food & beverage and industrial applications. Our equipment and solutions are found in water purification and sanitation systems, food service operations, food & beverage processing plants and in other applications across the globe.

The portfolio of products serves a range of industries, including use in the commercial, residential and industrial verticals. Brand names for Filtration Solutions offerings include Codeline, Everpure, Haffmans, Pelican, RainSoft, Südmo and X-Flow.

Customers
Filtration Solutions customers include businesses engaged in wholesale and retail distribution in the residential, commercial, food & beverage and industrial verticals. Customers in the residential and commercial vertical also include end-users, consumers and original equipment manufacturers.

Seasonality
We experience seasonal demand with several end customers and end-users within Filtration Solutions. End-user demand for water filtration products generally follows warm weather trends and is at seasonal highs from April to July.

Competition
Filtration Solutions faces numerous domestic and international competitors, some of which have substantially greater resources directed to the verticals in which we compete. Competition focuses on brand names, product performance (including required specification), quality and price. We compete by offering a wide variety of innovative and high-quality products, which are competitively priced. We believe our distribution channels and reputation for quality also provide us a competitive advantage.

Flow Technologies
The Flow Technologies segment manufactures and sells products ranging from light duty diaphragm pumps to high-flow turbine pumps and solid handling pumps while serving the global residential, commercial and industrial markets. These pumps are used in a range of applications, including residential and municipal wells, water treatment, wastewater solids handling, pressure boosting, fluid delivery, circulation and transfer, fire suppression, flood control, agricultural irrigation and crop spray.

Brand names for Flow Technologies include Aurora, Berkeley, Fairbanks-Nijhuis, Hydromatic, Hypro, Jung Pumpen, Pentair, Myers, Sta-Rite, and Shurflo.

Customers
Flow Technologies customers include businesses engaged in wholesale and retail distribution in the residential & commercial, food & beverage and industrial verticals. Customers also include end-users and consumers in the residential & commercial vertical.

Seasonality
We experience increased demand for residential water supply, infrastructure and agricultural products following warm weather trends, which are at season highs from April to August. The magnitude of the sales increase is mitigated by employing some advance sale "early buy" programs (generally including extended payment terms and/or additional discounts). Seasonal effects may vary from year to year and are impacted by weather patterns, particularly by temperatures, heavy flooding and droughts.

Competition
Flow Technologies faces numerous domestic and international competitors, some of which have substantially greater resources directed to the verticals in which we compete. Competition focuses on brand names, product performance (including energy-efficient offerings and required specifications), quality, service and price. We compete by offering a wide variety of innovative and high-quality products, which are competitively priced.

NEW SEGMENTATION

During the first quarter of 2020, we reorganized our business segments to better align our organization with our strategies and to better align with our customer base, resulting in a change to our reporting segments in 2020. We believe the new alignment into a business-to-consumer focused segment, Consumer Solutions, and primarily business-to-business driven segment, Industrial & Flow Technologies, better positions our teams to build upon our core strengths, more aggressively pursue our growth opportunities, increase productivity, and enhance profitability.

As part of this reorganization, the legacy Aquatic Systems reporting segment was combined with the Residential and Commercial Systems and Components businesses of the legacy Filtrations Solutions reporting segment to form the Consumer Solutions reporting segment. In addition, the Industrial Filtration and Food and Beverage businesses of the legacy Filtration Solutions reporting segment were combined with the legacy Flow Technologies reporting segment to form the Industrial & Flow Technologies reporting segment. All segment information presented throughout this Annual Report on Form 10-K, with exception of the table below, was prepared based on the reporting segments in place during 2019.

The below table presents net sales and segment income under the revised reporting segments (Consumer Solutions and Industrial & Flow Technologies) for the years ended December 31, 2019, 2018 and 2017.

	December 31		
In millions	**2019**	**2018**	**2017**
Net Sales			
Consumer Solutions	$ 1,611.7	$ 1,578.4	$ 1,489.5
Industrial & Flow Technologies	1,344.1	1,385.4	1,354.9
Other	1.4	1.3	1.3
Consolidated	$ 2,957.2	$ 2,965.1	$ 2,845.7
Segment income (loss)			
Consumer Solutions	$ 379.6	$ 392.9	$ 372.0
Industrial & Flow Technologies	199.0	198.8	177.2
Other	(62.3)	(54.9)	(52.7)
Consolidated	$ 516.3	$ 536.8	$ 496.5

INFORMATION REGARDING ALL REPORTABLE SEGMENTS

Backlog of orders by segment

	December 31			
In millions	**2019**	**2018**	**$ change**	**% change**
Aquatic Systems	$ 93.6	$ 80.3	$ 13.3	16.6 %
Filtration Solutions	76.1	96.2	(20.1)	(20.9)%
Flow Technologies	155.3	156.0	(0.7)	(0.4)%
Total	$ 325.0	$ 332.5	$ (7.5)	(2.3)%

A substantial portion of our revenues result from orders received and products delivered in the same month. Our backlog typically has a short manufacturing cycle and products generally ship within 90 days of the date on which a customer places an order. However, a portion of our backlog, particularly from orders for major capital projects, can take more than one year depending on the size and type of order. We record as part of our backlog all orders from external customers, which represent firm commitments, and are supported by a purchase order or other legitimate contract. We expect the majority of our backlog at December 31, 2019 will be shipped in 2020.

Research and development

We conduct research and development activities primarily in our own facilities. These efforts consist primarily of the development of new products, product applications and manufacturing processes.

Raw materials

The principal materials we use in manufacturing our products are electric motors, mild steel, stainless steel, electronic components, plastics (resins, fiberglass, epoxies), copper and paint (powder and liquid). In addition to the purchase of raw materials, we purchase some finished goods for distribution through our sales channels.

We purchase the materials we use in various manufacturing processes on the open market, and the majority is available through multiple sources which are in adequate supply. We have not experienced any significant work stoppages to date due to shortages of materials. We have certain long-term commitments, principally price commitments, for the purchase of various component parts and raw materials and believe that it is unlikely that any of these agreements would be terminated prematurely. Alternate sources of supply at competitive prices are available for most materials for which long-term commitments exist, and we believe that the termination of any of these commitments would not have a material adverse effect on our financial position, results of operations or cash flows.

Certain commodities, such as metals and resin, are subject to market and duty-driven price fluctuations. We manage these fluctuations through several mechanisms, including long-term agreements with price adjustment clauses for significant commodity market movements in certain circumstances. Prices for raw materials, such as metals and resins, may trend higher in the future.

Intellectual property
Patents, non-compete agreements, proprietary technologies, customer relationships, trademarks, trade names and brand names are important to our business. However, we do not regard our business as being materially dependent upon any single patent, non-compete agreement, proprietary technology, customer relationship, trademark, trade name or brand name.

Patents, patent applications and license agreements will expire or terminate over time by operation of law, in accordance with their terms or otherwise. We do not expect the termination of patents, patent applications or license agreements to have a material adverse effect on our financial position, results of operations or cash flows.

Employees
As of December 31, 2019, we employed approximately 9,500 people worldwide.

Captive insurance subsidiary
A portion of our property and casualty insurance program is insured through our regulated wholly-owned captive insurance subsidiary, Penwald Insurance Company ("Penwald"). Reserves for policy claims are established based on actuarial projections of ultimate losses. Accruals with respect to liabilities insured by third parties, such as liabilities arising from acquired businesses, pre-Penwald liabilities and those of certain non-U.S. operations are established.

Matters pertaining to Penwald are discussed in ITEM 3 and ITEM 8, Note 1 of the Notes to Consolidated Financial Statements – Insurance subsidiary, included in this Form 10-K.

Available information
We make available free of charge (other than an investor's own Internet access charges) through our Internet website (http://www.pentair.com) our Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, and if applicable, amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act as soon as reasonably practicable after we electronically file such material with, or furnish it to, the Securities and Exchange Commission (the "SEC"). Reports of beneficial ownership filed by our directors and executive officers pursuant to Section 16(a) of the Exchange Act are also available on our website. We are not including the information contained on our website as part of or incorporating it by reference into, this Annual Report on Form 10-K.

ITEM 1A. RISK FACTORS

You should carefully consider all of the information in this document and the following risk factors before making an investment decision regarding our securities. Any of the following risks could materially and adversely affect our business, financial condition, results of operations, cash flows and the actual outcome of matters as to which forward-looking statements are made in this document.

Risks Relating to Our Business

General global economic and business conditions affect demand for our products.
We compete in various geographic regions and product markets around the world. Among these, the most significant are global industrial, commercial, and residential markets. We have experienced, and expect to continue to experience, fluctuations in revenues and results of operations due to economic and business cycles. Important factors for our businesses and the businesses of our customers include the overall strength of the global economy and various regional economies and our customers' confidence in these economies, industrial and governmental capital spending, the strength of the residential and commercial real estate markets, the residential housing market, the commercial business climate, unemployment rates, availability of consumer and commercial financing, interest rates, and energy and commodity prices. The businesses of many of our industrial customers are to varying degrees cyclical and have experienced periodic downturns. While we attempt to minimize our exposure to economic or market fluctuations by serving a balanced mix of end markets and geographic regions, any of the above factors, individually or in the aggregate, or a significant or sustained downturn in a specific end market or geographic region could reduce demand for our products and services, which could have a material adverse effect on our business, financial condition, results of operations and cash flows.

We compete in attractive markets with a high level of competition, which may result in pressure on our profit margins and limit our ability to maintain or increase the market share of our products.

The markets for our products and services are geographically diverse and highly competitive. We compete against large and well-established national and global companies, as well as regional and local companies and lower cost manufacturers. Competition may also result from new entrants into the markets we serve, offering products and/or services that compete with us. We compete based on technical expertise, intellectual property, reputation for quality and reliability, timeliness of delivery, previous installation history, contractual terms, service offerings, customer experience and service, and price. Competition may also result from new entrants into the markets we serve, offering products and/or services that compete with us. Some of our competitors, in particular smaller companies, attempt to compete based primarily on price, localized expertise and local relationships, especially with respect to products and applications that do not require a great deal of engineering or technical expertise. In addition, during economic downturns average selling prices tend to decrease as market participants compete more aggressively on price. Moreover, demand for our products, which impacts profit margins, is affected by changes in customer order patterns, such as changes in the levels of inventory maintained by customers and the timing of customer purchases, and changes in customers' preferences for our products, including the success of products offered by our competitors. Customer purchasing behavior may also shift by product mix in the market or result in a shift to new distribution channels, including e-commerce, which is a rapidly developing area. If we are unable to continue to differentiate our products, services and solutions or adapt to changes in customer purchasing behavior or shifts in distribution channels, or if we are forced to cut prices or to incur additional costs to remain competitive, it could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Volatility in currency exchange rates could have a material adverse effect on our financial condition, results of operations and cash flows.

Sales outside of the U.S. for the year ended December 31, 2019 accounted for 37% of our net sales. Our financial statements reflect translation of items denominated in non-U.S. currencies to U.S. dollars. Therefore, if the U.S. dollar strengthens in relation to the principal non-U.S. currencies from which we derive revenue as compared to a prior period, our U.S. dollar reported revenue and income will effectively be decreased to the extent of the change in currency valuations, and vice-versa. Fluctuations in foreign currency exchange rates, most notably the strengthening of the U.S. dollar against the euro, could have a material adverse effect on our reported revenue in future periods. In addition, currency variations could have a material adverse effect on margins on sales of our products in countries outside of the U.S. and margins on sales of products that include components obtained from suppliers located outside of the U.S.

Our future growth is dependent upon our ability to transform and adapt our products, services, solutions, and organization to meet the demands of local markets in both developed and emerging economies and by developing or acquiring new technologies that achieve market acceptance with acceptable margins.

We operate in global markets that are characterized by customer demand that is often global in scope but localized in delivery. We compete with thousands of smaller regional and local companies that may be positioned to offer products produced at lower cost than ours, or to capitalize on highly localized relationships and knowledge that are difficult for us to replicate. Also, in several emerging markets, potential customers prefer local suppliers, in some cases because of existing relationships and in other cases because of local legal restrictions or incentives that favor local businesses. Accordingly, our future success depends upon a number of factors, including our ability to transform and adapt our products, services, solutions, organization, workforce and sales strategies to fit localities throughout the world, particularly in high growth emerging markets; identify emerging technological and other trends in our target end markets; and develop or acquire competitive technologies, products, services, and solutions and bring them to market quickly and cost-effectively. The failure to effectively adapt our products, services, or solutions could have a material adverse effect on our business, financial condition, results of operations and cash flows.

We may not be able to identify, finance and complete suitable acquisitions and investments, and any completed acquisitions and investments may be unsuccessful or consume significant resources.

Our business strategy includes acquiring businesses and making investments that complement our existing businesses. We continue to analyze and evaluate the acquisition of strategic businesses or product lines with the potential to strengthen our industry position or enhance our existing set of product, service, and solution offerings. We may not be able to identify suitable acquisition candidates, obtain financing or have sufficient cash necessary for acquisitions or successfully complete acquisitions in the future. Any acquisitions that we complete may not be successful. Acquisitions and investments may involve significant cash expenditures, debt incurrences, equity issuances, operating losses and expenses. Acquisitions involve numerous other risks, including:

- diversion of management time and attention from daily operations;
- difficulties integrating acquired businesses, technologies and personnel into our business;
- difficulties in obtaining and verifying the financial statements and other business information of acquired businesses;
- inability to obtain required regulatory approvals;
- potential loss of key employees, key contractual relationships or key customers of acquired companies or of ours;

- assumption of the liabilities and exposure to unforeseen liabilities of acquired companies, including risks relating to the U.S. Foreign Corrupt Practices Act (the “FCPA”) and privacy laws, including the General Data Protection Regulation (“GDPR”); and
- dilution of interests of holders of our shares through the issuance of equity securities or equity-linked securities.

It may be difficult for us to integrate acquired operations, including those from our recent acquisitions of Aquion, Inc. and Pelican Water Systems, efficiently into our business operations. Any acquisitions or investments may not be successful and may ultimately result in impairment charges and have a material adverse effect on our business, financial condition, results of operations and cash flows.

We may not achieve some or all of the expected benefits of our business initiatives.
During 2019, 2018 and 2017, we initiated and continued execution of certain business initiatives aimed at reducing our fixed cost structure and realigning our business. As a result, we have incurred substantial expense, including restructuring charges. We may not be able to achieve the operating efficiencies to reduce costs or realize benefits that were anticipated in connection with these initiatives. If we are unable to execute these initiatives as planned, we may not realize all or any of the anticipated benefits, which could have a material adverse effect on our business, financial condition, results of operations and cash flows.

We are exposed to political, regulatory, economic, trade, and other risks that arise from operating a multinational business.
Sales outside of the U.S. for the year ended December 31, 2019 accounted for 37% of our net sales. Further, most of our businesses obtain some products, components and raw materials from non-U.S. suppliers. Accordingly, our business is subject to the political, regulatory, economic, trade, and other risks that are inherent in operating in numerous countries. These risks include:

- changes in general economic and political conditions in countries where we operate, particularly in emerging markets;
- relatively more severe economic conditions in some international markets than in the U.S.;
- the imposition of tariffs, duties, exchange controls or other trade restrictions;
- changes in tax treaties, laws or rulings that could have a material adverse impact on our effective tax rate;
- the difficulty of enforcing agreements and collecting receivables through non-U.S. legal systems;
- the difficulty of communicating and monitoring evolving standards and directives across our product lines, services, and global facilities;
- trade protection measures and import or export licensing requirements and restrictions;
- the possibility of terrorist action affecting us or our operations;
- the threat of nationalization and expropriation;
- difficulty in staffing and managing widespread operations in non-U.S. labor markets;
- limitations on repatriation of earnings or other regionally-imposed capital requirements;
- the difficulty of protecting intellectual property in non-U.S. countries; and
- changes in and required compliance with a variety of non-U.S. laws and regulations.

In 2016, the United Kingdom voted in a referendum to exit the European Union (“Brexit”), which resulted in significant currency exchange rate fluctuations and volatility. The Brexit bill was passed by the United Kingdom on January 23, 2020, and it was passed by the European Parliament on January 29, 2020. The United Kingdom’s exit from the European Union became effective on January 31, 2020. Given the lack of comparable precedent, the implications of Brexit, or how such implications might affect our company, continue to remain unclear at this time. Brexit could, among other impacts, disrupt trade and the movement of goods, services and people between the United Kingdom and the European Union or other countries as well as create legal and global economic uncertainty.

Our success depends in part on our ability to anticipate and effectively manage these and other risks. We cannot assure that these and other factors will not have a material adverse effect on our international operations or on our business as a whole.

Changes in U.S. or foreign government administrative policy, including changes to existing trade agreements, could have a material adverse effect on us.
As a result of changes to U.S. or foreign government administrative policy, there may be changes to existing trade agreements, like the North American Free Trade Agreement (“NAFTA”) and its anticipated successor agreement, the U.S.-Mexico-Canada Agreement (“USMCA”), which is still subject to approval by Canada, greater restrictions on free trade generally, and significant increases in

tariffs on goods imported into the U.S., particularly tariffs on products manufactured in Mexico, China, or other U.S. trading countries where we have operations or manufacture or sell products, among other possible changes. If the USMCA is ratified by Canada, its provisions will go into effect shortly thereafter. While the USMCA is somewhat similar to NAFTA, it contains several new compliance obligations addressing such issues as rules of origin, labor standard, certificate of origin documentation and de minimis thresholds, as well as new policies on labor and environmental standards, intellectual property protections and some digital trade provisions. We are currently analyzing the expected impact of the USMCA. While certain aspects of the USMCA are expected to be positive, others, including potentially higher regulatory compliance costs, may have an adverse impact on our business. It remains unclear what the U.S. administration or foreign governments, including China, will or will not do with respect to tariffs, NAFTA, USMCA or other international trade agreements and policies. A trade war, other governmental action related to tariffs or international trade agreements, including NAFTA and USMCA, changes in U.S. social, political, regulatory and economic conditions or in laws and policies governing foreign trade, manufacturing, development and investment in the territories and countries where we currently manufacture and sell products, and any resulting negative sentiments towards the U.S. as a result of such changes, could have a material adverse effect on our business, financial condition, results of operations and cash flows.

We may experience cost and other inflation.

In the past, we have experienced material cost and other inflation in a number of our businesses. We strive for productivity improvements and implement increases in selling prices to help mitigate cost increases in raw materials (especially metals and resins), energy and other costs including wages, pension, health care and insurance. We continue to implement operational initiatives in order to mitigate the impacts of this inflation and continuously reduce our costs. However, these actions may not be successful in managing our costs or increasing our productivity. Continued cost inflation or failure of our initiatives to generate cost savings or improve productivity could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Intellectual property challenges may hinder our ability to develop, engineer and market our products.

Patents, non-compete agreements, proprietary technologies, customer relationships, trademarks, trade names and brand names are important to our business. Intellectual property protection, however, may not preclude competitors from developing products similar to ours or from challenging our names or products. Our pending patent applications, and our pending copyright and trademark registration applications, may not be allowed, or competitors may challenge the validity or scope of our patents, copyrights or trademarks. In addition, our patents, copyrights, trademarks and other intellectual property rights may not provide us a significant competitive advantage. Over the past few years, we have noticed an increasing tendency for participants in our markets to use challenges to intellectual property as a means to compete. Patent and trademark challenges increase our costs to develop, engineer and market our products. We may need to spend significant resources monitoring, enforcing and defending our intellectual property rights, and we may or may not be able to detect infringement by third parties. If we fail to successfully enforce our intellectual property rights or register new patents, our competitive position could suffer, which could have a material adverse effect on our business, financial condition, results of operations and cash flows.

We have significant goodwill and intangible assets and future impairment of our goodwill and intangible assets could have a material adverse effect on our results of operations.

We test goodwill and other indefinite-lived intangible assets for impairment on at least an annual basis, and more frequently if circumstances warrant. As of December 31, 2019 our goodwill and intangible assets were $2,598 million and represented 63% of our total assets. Declines in fair market value could result in future goodwill and intangible asset impairment charges.

A loss of, or material cancellation, reduction, or delay in purchases by, one or more of our largest customers could harm our business.

Our net sales to our largest customer represented approximately 15% of our consolidated net sales in 2019. While we do not have any other customers that accounted for 10% or more of our consolidated net sales in 2019, we have other customers that are key to the success of our business. Our concentration of sales to a relatively small number of larger customers makes our relationship with each of these customers important to our business. Our success is dependent on retaining these customers, which requires us to successfully manage relationships and anticipate the needs of our customers in the channels in which we sell our products. Our customers also may be impacted by economic conditions in the industries of those customers, which could result in reduced demand for our products. We cannot provide assurance that we will be able to retain our largest customers. In addition, some of our customers may shift their purchases to our competitors in the future. The loss of one or more of our largest customers, any material cancellation, reduction, or delay in purchases by these customers, or our inability to successfully develop relationships with additional customers could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Catastrophic and other events beyond our control may disrupt operations at our manufacturing facilities and those of our suppliers, which could cause us to be unable to meet customer demands or increase our costs, or reduce customer spending.

If operations at any of our manufacturing facilities or those of our suppliers were to be disrupted as a result of significant equipment failures, natural disasters, earthquakes, power outages, fires, explosions, terrorism, adverse weather conditions, labor disputes, public health epidemics or other catastrophic events or events outside of our control, we may be unable to fill customer orders and otherwise meet customer demand for our products. In addition, these types of events may negatively impact residential, commercial and industrial spending in impacted regions or, depending on the severity, globally. As a result, any of such events could have a material adverse effect on our business, financial condition, results of operations and cash flows. For example, we are evaluating the potential impact of the coronavirus (COVID-19) outbreak that originated in China, including evaluating the impact on our employees, customers, and global supply chain, and of governmental actions being taken to curtail the spread of the virus. The significance of the impact of the coronavirus outbreak to us remains unclear at this time; however, it could have a material adverse effect on our business, financial condition, results of operations and cash flows. Interruptions in production, in particular at our manufacturing facilities, could increase our costs and reduce our sales. Any interruption in production capability could require us to make substantial capital expenditures to fill customer orders. 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 any 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 have a material adverse effect on our business, financial condition, results of operations and cash flows.

Seasonality of sales and weather conditions could have a material adverse effect on our financial results.

We experience seasonal demand with end-customers and end-users within each of our business segments. Demand for pool equipment in the Pool business, water treatment solutions in our Water Solutions and Industrial Filtration businesses, and residential water supply, infrastructure and agricultural products in the businesses within the Industrial & Flow Technologies segment follows warm weather trends and is at seasonal highs from April to August. While we attempt to mitigate the magnitude of the sales spike in the Pool business and in the businesses within the Industrial & Flow Technologies segment by employing some advance sale "early buy" programs (generally including extended payment terms and/or additional discounts), we cannot provide any assurance that such programs will be successful. In addition, seasonal effects in the Pool business and in the businesses within the Industrial & Flow Technologies segment may vary from year to year and be impacted by weather patterns, particularly by temperature, heavy flooding and droughts. Moreover, adverse weather conditions, such as cold or wet weather, may negatively impact demand for, and sales of, pool equipment in the Pool business and residential water supply, commercial, infrastructure and agricultural products in the businesses within the Industrial & Flow Technologies segment.

Covenants in our debt instruments may adversely affect us.

Our credit agreements and indentures contain customary financial covenants, including those that limit the amount of our debt, which may restrict the operations of our business and our ability to incur additional debt to finance acquisitions. Our ability to meet the financial covenants may be affected by events beyond our control, and we cannot provide assurance that we will meet those tests. A breach of any of these covenants could result in a default under our credit agreements or indentures. Upon the occurrence of an event of default under any of our credit facilities or indentures, the lenders or trustees could elect to declare all amounts outstanding thereunder to be immediately due and payable and, in the case of credit facility lenders, terminate all commitments to extend further credit. If the lenders or trustees accelerate the repayment of borrowings, we cannot provide assurance that we will have sufficient assets to repay our credit facilities and our other indebtedness. Furthermore, acceleration of any obligation under any of our material debt instruments will permit the holders of our other material debt to accelerate their obligations, which could have a material adverse effect on our financial condition.

We may increase our debt or raise additional capital, our credit ratings may be downgraded in the future, or our interest rates may increase, each of which could affect our financial condition, and may decrease our profitability.

As of December 31, 2019, we had $1,029.1 million of total debt outstanding. We may increase our debt or raise additional capital in the future, subject to restrictions in our debt agreements. If our cash flow from operations is less than we anticipate, if our cash requirements are more than we expect, or if we intend to finance acquisitions, we may require more financing. However, debt or equity financing may not be available to us on acceptable terms, if at all. If we incur additional debt or raise equity through the issuance of additional capital shares, the terms of the debt or capital shares issued may give the holders rights, preferences and privileges senior to those of holders of our ordinary shares, particularly in the event of liquidation. The terms of the debt may also impose additional and more stringent restrictions on our operations than we currently have. If we raise funds through the issuance of additional equity, the percentage ownership of existing shareholders in our company would decline. If we are unable to raise additional capital when needed, our financial condition could be adversely affected. 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. If ratings for our debt fall below investment grade, our access to the debt capital markets may become restricted. Additionally, our credit agreements generally include an increase in interest rates if the ratings for our debt are downgraded. In addition, borrowings under our revolving credit facility and term loans bear interest at a rate equal to an adjusted base rate or the London Interbank Offered Rate ("LIBOR"), plus, in each case, an applicable margin. The U.K. Financial Conduct Authority, which regulates LIBOR, has announced it intends to stop compelling banks to submit rates for calculation of LIBOR after 2021. The credit agreement governing our revolving credit facility and term loans provides procedures for determining a replacement or alternative base rate in the event that LIBOR is discontinued; however, any calculation of interest based upon such replacement or alternative base rate may result in higher interest rates. To the extent that our interest rates increase, our interest expense will increase, which could adversely affect our financial condition, results of operations and cash flows.

Our leverage could have a material adverse effect on our business, financial condition or results of operations.
Our ability to make payments on and to refinance our indebtedness, including our existing debt as well as any future debt that we may incur, will depend on our ability to generate cash in the future from operations, financings or asset sales. Our ability to generate cash is subject to general economic, financial, competitive, legislative, regulatory and other factors that are beyond our control. If we are not able to repay or refinance our debt as it becomes due, we may be forced to sell assets or take other disadvantageous actions, including (i) reducing financing in the future for working capital, capital expenditures and general corporate purposes or (ii) dedicating an unsustainable level of our cash flow from operations to the payment of principal and interest on our indebtedness. The lenders who hold such debt could also accelerate amounts due, which could potentially trigger a default or acceleration of any of our other debt.

Disruptions in the financial markets could adversely affect us, our customers and our suppliers by increasing funding costs or reducing availability of credit.
In the normal course of our business, we may access credit markets for general corporate purposes, which may include repayment of indebtedness, acquisitions, additions to working capital, repurchase of shares, capital expenditures and investments in our subsidiaries. Although we expect to have sufficient liquidity to meet our foreseeable needs, our access to and the cost of capital could be negatively impacted by disruptions in the credit markets, which have occurred in the past and made financing terms for borrowers unattractive or unavailable. These factors may make it more difficult or expensive for us to access credit markets if the need arises. In addition, these factors may make it more difficult for our suppliers to meet demand for their products or for prospective customers to commence new projects, as customers and suppliers may experience increased costs of debt financing or difficulties in obtaining debt financing. Disruptions in the financial markets have had adverse effects on other areas of the economy and have led to a slowdown in general economic activity that may continue to adversely affect our businesses. One or more of these factors could adversely affect our business, financial condition, results of operations or cash flows.

Our share price may fluctuate significantly.
We cannot predict the prices at which our shares may trade. The market price of our shares may fluctuate widely, depending on many factors, some of which may be beyond our control, including:

- actual or anticipated fluctuations in our results of operations due to factors related to our business;
- success or failure of our business strategy;
- our quarterly or annual earnings, or those of other companies in our industry;
- our ability to obtain third-party financing as needed;
- announcements by us or our competitors of significant acquisitions or dispositions;
- changes in accounting standards, policies, guidance, interpretations or principles;
- changes in earnings estimates or guidance by us or securities analysts or our ability to meet those estimates or guidance;
- the operating and share price performance of other comparable companies;
- investor perception of us;
- overall market fluctuations;
- results from any material litigation or governmental investigation or environmental liabilities;
- natural or other environmental disasters;
- changes in laws and regulations affecting our business; and
- general economic conditions and other external factors.

Stock markets in general have experienced volatility that has often been unrelated to the operating performance of a particular company. These broad market fluctuations could have a material adverse effect on our share price.

Risks Relating to Legal, Regulatory and Compliance Matters

Violations of the U.S. Foreign Corrupt Practices Act, U.K. Bribery Act, and other anti-corruption laws outside the U.S. could have a material adverse effect on us.
The FCPA, U.K. Bribery Act, and other anti-corruption 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. Recent years have seen a substantial increase in anti-bribery law enforcement activity, with more frequent and aggressive investigations and enforcement proceedings by both the U.S. Department of Justice and the SEC, increased enforcement activity by non-U.S. regulators and increases in criminal and civil proceedings brought against companies and individuals. 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 in certain circumstances, strict compliance with anti-bribery laws may conflict with local customs and practices. Because many of our customers and end users are involved in infrastructure construction and energy production, they are often subject to increased scrutiny by regulators. We cannot assure you that our internal control policies and procedures will always protect us from 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, including the FCPA, we may be required to investigate or have outside counsel investigate the relevant facts and circumstances, which can be expensive and require significant time and attention from senior management. Violations of these laws may require self-disclosure to government agencies and 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.

Our failure to satisfy international trade compliance regulations, and changes in U.S. government sanctions, could have a material adverse effect on us.
Our global operations require importing and exporting goods and technology across international borders on a regular basis. Certain of the products we manufacture are "dual use" products, which are products that may have both civil and military applications, or may otherwise be involved in weapons proliferation, and are often subject to more stringent export controls. From time to time, we obtain or receive information alleging improper activity in connection with imports or exports. Our policy mandates strict compliance with U.S. and non-U.S. trade laws applicable to our products. However, even when we are in strict compliance with law and our policies, we may suffer reputational damage if certain of our products are sold through various intermediaries to entities operating in sanctioned countries. When we receive information alleging improper activity, our policy is to investigate that information and respond appropriately, including, if warranted, reporting our findings to relevant governmental authorities. Nonetheless, our policies and procedures may not always protect us from actions that would violate U.S. and/or non-U.S. laws. Any improper actions could subject us to civil or criminal penalties, including material monetary fines, or other adverse actions including denial of import or export privileges, and could damage our reputation and business prospects.

We are exposed to potential environmental laws, liabilities and litigation.
We are subject to U.S. federal, state, local and non-U.S. laws and regulations governing our environmental practices, public and worker health and safety, and the indoor and outdoor environment. Compliance with these environmental, health and safety regulations could require us to satisfy environmental liabilities, increase the cost of manufacturing our products or otherwise have a material adverse effect on our business, financial condition, results of operations and cash flows. Any violations of these laws by us could cause us to incur unanticipated liabilities. We are also required to comply with various environmental laws and maintain permits, some of which are subject to renewal from time to time, for many of our businesses, and we could suffer if we are unable to renew existing permits or to obtain any additional permits that we may require. Compliance with environmental requirements also could require significant operating or capital expenditures or result in significant operational restrictions. We cannot assure you that we have been or will be at all times in compliance with environmental and health and safety laws. If we violate these laws, we could be fined, criminally charged or otherwise sanctioned by regulators.

We have been named as defendant, target or a potentially responsible party ("PRP") in a number of environmental clean-ups relating to our current or former businesses. We have disposed of a number of businesses in recent years and in certain cases, we have retained responsibility and potential liability for certain environmental obligations. We have received claims for indemnification from certain purchasers. We may be named as a PRP at other sites in the future for existing business units, as well as both divested and acquired businesses. In addition to clean-up actions brought by governmental authorities, private parties could bring personal injury or other claims due to the presence of, or exposure to, hazardous substances.

Certain environmental laws impose liability on current or previous owners or operators of real property for the cost of removal or remediation of hazardous substances at their properties or at properties at which they have disposed of hazardous substances. We have projects underway at several current and former manufacturing facilities to investigate and remediate environmental contamination resulting from our past operations or by other businesses that previously owned or used the properties. The cost of clean-up and other environmental liabilities can be difficult to accurately predict. In addition, environmental requirements change and tend to become more stringent over time. Our eventual environmental clean-up costs and liabilities could exceed the amount of our current reserves.

Our subsidiaries are party to asbestos-related product litigation that could adversely affect our financial condition, results of operations and cash flows.
Our subsidiaries, along with numerous other companies, are named as defendants in a substantial number of lawsuits based on alleged exposure to asbestos-containing materials, substantially all of which relate to our discontinued operations. 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 attached to or used with asbestos-containing components manufactured by third parties. Each case typically names between several dozen to more than a hundred corporate defendants. Historically, our subsidiaries have been identified as defendants in asbestos-related claims. Our strategy has been, and continues to be, to mount a vigorous defense aimed at having unsubstantiated suits dismissed, and, only where appropriate, settling claims before trial. As of December 31, 2019, there were approximately 730 claims pending against our subsidiaries, substantially all of which relate to our discontinued operations. We cannot predict with certainty the extent to which we will be successful in litigating or otherwise resolving lawsuits 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.

We are exposed to certain regulatory and financial risks related to climate change.

Climate change is receiving ever increasing attention worldwide. Many scientists, legislators and others attribute global warming to increased levels of greenhouse gases, which has led to significant legislative and regulatory efforts to limit greenhouse gas emissions. The U.S. Environmental Protection Agency ("EPA") has published findings that emissions of carbon dioxide, methane, and other greenhouse gases ("GHGs") present an endangerment to public health and the environment because emissions of such gases are, according to the EPA, contributing to the warming of the earth's atmosphere and other climate changes. Based on these findings, the EPA has implemented regulations that require reporting of GHG emissions, or that limit emissions of GHGs from certain mobile or stationary sources. In addition, the U.S. Congress and federal and state regulatory agencies have considered other legislation and regulatory proposals to reduce emissions of GHGs, and many states have already taken legal measures to reduce emissions of GHGs, primarily through the development of GHG inventories, GHG permitting and/or regional GHG cap-and-trade programs. It is uncertain whether, when and in what form a federal mandatory carbon dioxide emissions reduction program, or other state programs, may be adopted. Similarly, certain countries have adopted the Kyoto Protocol and/or the Paris Accord, and these and other existing international initiatives and regulations or those under consideration could affect our international operations. To the extent our customers, particularly our energy and industrial customers, are subject to any of these or other similar proposed or newly enacted laws and regulations, we are exposed to risks that the additional costs by customers to comply with such laws and regulations could impact their ability or desire to continue to operate at similar levels in certain jurisdictions as historically seen or as currently anticipated, which could negatively impact their demand for our products and services. In addition, as customers become increasingly concerned about the environmental impact of their purchases, if we fail to keep up with changing regulations or innovate in ways that minimize the energy use of our products, customers may choose more energy efficient alternatives. These actions could also increase costs associated with our operations, including costs for raw materials and transportation. It is uncertain what laws will be enacted and therefore we cannot predict the potential impact of such laws on our future financial condition, results of operations and cash flows.

Increased information technology security threats and computer crime pose a risk to our systems, networks, products and services, and we are exposed to potential regulatory, financial and reputational risks relating to the protection of our data.

We rely upon information technology systems and networks in connection with a variety of business activities, some of which are managed by third parties. As our business increasingly interfaces with employees, customers, dealers and suppliers using information technology systems and networks, we are subject to an increased risk to the secure operation of these systems and networks. Our evolution into smart products, Internet of Things, business-to-consumer, and e-commerce subjects us to increased cyber and technology risks. The secure operation of our information technology systems and networks is critical to our business operations and strategy. Information technology security threats -- from user error to attacks designed to gain unauthorized access to our systems, networks and data -- are increasing in frequency and sophistication. These threats pose a risk to the security of our systems and networks and the confidentiality, availability and integrity of the data we process and maintain. Establishing systems and processes to address these threats may increase our costs. We have experienced data breaches, and, although we have determined such data breaches to be immaterial and such data breaches have not had a material adverse effect on our financial condition, results of operations or cash flows, there can be no assurance of similar results in the future. Should future attacks succeed in the theft of assets, exporting sensitive data or financial information or controlling sensitive systems or networks, it could expose us and our employees, customers, dealers and suppliers to the theft of assets, misuse of information or systems, compromising of confidential information, manipulation and destruction of data, defective products, production downtimes and operations disruptions. The occurrence of any of these events could have a material adverse effect on our reputation, business, financial condition, results of operations and cash flows. In addition, such breaches in security could result in litigation, regulatory action and potential liability and the costs and operational consequences of implementing further data protection measures.

Changes in data privacy laws and our ability to comply with them could have a material adverse effect on us.

We collect and store data that is sensitive to Pentair and its employees, customers, dealers and suppliers. A variety of state, national, foreign and international laws and regulations apply to the collection, use, retention, protection, security, disclosure, transfer and other processing of personal and other data. Many foreign data privacy regulations, including the GDPR, which became effective in the European Union in 2018, are more stringent than federal regulations in the United States. Within the United States, many states are considering adopting, or have already adopted privacy regulations, including, for example, the California Consumer Privacy Act.

These laws and regulations are rapidly evolving and changing, and could have an adverse effect on our operations. Companies' obligations and requirements under these laws and regulations are subject to uncertainty in how they may be interpreted by courts and governmental authorities. The costs of compliance with, and the other burdens imposed by, these and other laws or regulatory actions may increase our operational costs, and/or result in interruptions or delays in the availability of systems. In the case of non-compliance of these laws, including the GDPR, regulators have the authority to levy significant fines. In addition, if there is a breach of privacy, we may be required to make notifications under data privacy regulations. The occurrence of any of these events could have a material adverse effect on our reputation, business, financial condition, results of operations and cash flows.

We may be negatively impacted by litigation and other claims.
We are currently, and may in the future, become subject to litigation and other claims. These legal proceedings are typically claims that relate to the products or to the conduct of our business and include, without limitation, claims relating to commercial or contractual disputes with suppliers, customers or parties to acquisitions and divestitures, intellectual property matters, environmental, safety and health matters, product liability, the use or installation of our products, consumer protection matters, and employment and labor matters. The outcome of such legal proceedings cannot be predicted with certainty and some may be disposed of unfavorably to us. We also may not have insurance that covers such claims. While we currently maintain what we believe to be suitable product liability insurance, we may not be able to maintain this insurance on acceptable terms, and this insurance may not provide adequate protection against potential or previously existing liabilities. In addition, we self-insure a portion of product liability claims. Further, some of our business involves the sale of our products to customers that are constructing large and complex systems, facilities or other capital projects, and while we generally try to limit our exposure liquidated damages, consequential damages and other damages in the contracts for these projects, we could be exposed to significant monetary damages and other liabilities in connection with the sale of our products for these projects for a variety of reasons. In addition, some of our businesses, customers, and dealers are subject to various laws and regulations regarding consumer protection and advertising and sales practices, and we have been named, and may be named in the future, as a defendant in litigation, some of which are or may be class action complaints, arising from alleged violation of these laws and regulations. Successful claims or litigation against us for significant amounts could have a material adverse effect on our reputation, business, financial condition, results of operations and cash flows.

Our focus on consumer solutions for residential and commercial water treatment as a strategic priority exposes us to certain risks that could have a material adverse impact on our revenue and profitability as well as our reputation.
As we introduce residential and commercial water solutions, we may have limited experience in markets we choose to enter, and our customers may not like our value propositions. New initiatives we test through trials and pilots may not scale or grow effectively or as we expected, which could limit our growth and negatively affect our operating results. Designing, marketing and executing these solutions is subject to incremental risks. These risks include, for example:

- increased labor expense to fulfill our customer promises, which may be higher than the related revenue;
- the requirement to recruit, train and retain qualified personnel;
- increased risk of errors or omissions in the fulfillment of solutions or services;
- unpredictable extended warranty failure rates and related expenses;
- employees in transit using company vehicles to visit customer locations and employees being present in customer homes, which may increase our scope of liability;
- the potential for increased scope of liability relating to our consumer products, services and solutions and related business model;
- the engagement of third parties to assist with installation or servicing of our products and solutions, and the potential responsibility for the actions they take; and
- increased risk of non-compliance with new laws and regulations applicable to these solutions.

These expanded risks increase the complexity of our business and place significant responsibility on our management, employees, operations, systems, technical expertise, financial resources, and internal controls and compliance functions.

Risks Relating to the Separation of nVent Electric plc by Spin-off

The spin-off transaction could result in substantial tax liability to us and our shareholders if the spin-off does not qualify as a tax-free transaction.
On April 30, 2018, we completed the separation of our Electrical business through the spin-off of nVent Electric plc to our shareholders. The spin-off was conditioned on our receipt of opinions of tax advisors and tax rulings from taxing authorities. However, these tax opinions will not be binding on taxing authorities. Accordingly, taxing authorities or the courts may reach conclusions with respect

to the spin-off that are different from the conclusions reached in such opinions. Moreover, such opinions were based on certain statements and representations made by us, which, if incomplete or inaccurate in any material respect, could invalidate the opinions. If the spin-off and certain related transactions were determined to be taxable, we could be subject to a substantial tax liability that could have a material adverse effect on our financial condition, results of operations and cash flows. In addition, if the spin-off were taxable, each holder of our ordinary shares who received shares of nVent Electric plc in the spin-off would generally be treated as receiving a taxable distribution of property in an amount equal to the fair market value of the shares received.

We may be exposed to claims and liabilities as a result of the spin-off.
In connection with the spin-off, we and nVent Electric plc entered into a separation and distribution agreement and various other agreements, including a transition services agreement, a tax matters agreement and an employee matters agreement. These agreements provide for the performance of services by each company for the benefit of the other for a period of time after the spin-off and provide for specific indemnity and liability obligations. The indemnity rights we have against nVent under the agreements may not be sufficient to protect us. In addition, our indemnity obligations to nVent may be significant, and these risks could negatively affect our financial condition, results of operations and cash flows.

Risks Relating to Our Jurisdiction of Incorporation in Ireland and Tax Residency in the U.K.

We are subject to changes in law and other factors that may not allow us to maintain a worldwide effective corporate tax rate that is competitive in our industry.
While we believe that we should be able to maintain a worldwide effective corporate tax rate that is competitive in our industry, we cannot give any assurance as to what our effective tax rate will be in the future because of, among other things, uncertainty regarding tax policies of the jurisdictions where we operate. Also, the tax laws of the U.S., the U.K., Ireland and other jurisdictions could change in the future, and such changes could cause a material change in our worldwide effective corporate tax rate. These changes include the Tax Cuts and Jobs Act enacted in the U.S. in December 2017, which made significant changes to certain U.S. tax laws relevant to us, including limitations on the deductibility of certain interest expense and employee compensation, limitations on various other deductions and credits, the imposition of taxes in respect of certain cross-border payments or transfers, the imposition of taxes on certain earnings of non-U.S. entities on a current basis, and changes in the timing of the recognition of income or its character. These items and regulations and guidance implementing the Tax Cuts and Jobs Act could materially adversely affect our financial condition, results of operations, cash flows or our effective tax rate in future reporting periods. In addition, legislative action could be taken by the U.S., the U.K., Ireland or the European Union that could override tax treaties or modify tax statutes or regulations upon which we expect to rely and adversely affect our effective tax rate. We cannot predict the outcome of any specific legislative proposals. If proposals were enacted that had the effect of disregarding our incorporation in Ireland or limiting our ability as an Irish company to maintain tax residency in the U.K. and take advantage of the tax treaties among the U.S., the U.K. and Ireland, we could be subject to increased taxation, which could materially adversely affect our financial condition, results of operations, cash flows or our effective tax rate in future reporting periods.

A change in our tax residency could have a negative effect on our future profitability, and may trigger taxes on dividends or exit charges.
Under current Irish legislation, a company is regarded as resident for tax purposes in Ireland if it is centrally managed and controlled in Ireland, or, in certain circumstances, if it is incorporated in Ireland. Under current U.K. legislation, a company that is centrally managed and controlled in the U.K. is regarded as resident in the U.K. for taxation purposes unless it is treated as resident in another jurisdiction pursuant to any appropriate double tax treaty with the U.K. Other jurisdictions may also seek to assert taxing jurisdiction over Pentair.

Where a company is treated as tax resident under the domestic laws of both the U.K. and Ireland, article 4(3) of the Double Tax Convention between Ireland and the U.K. (the "residence tie-breaker") historically provided that the company should be treated as resident only in one of those two jurisdictions if its place of effective management is situated in that jurisdiction.

The Organization for Economic Co-operation and Development proposed a number of measures relating to the tax treatment of multinationals, some of which are implemented by amending double tax treaties through a multilateral instrument (the "MLI"). The MLI has now entered into force for a number of countries, including Ireland and the U.K. Under the MLI, the residence tie-breaker is amended so that a company will not cease being dual resident until there is a determination by the tax authorities of the two contracting states, instead of an objective application of the place of effective management test.

Under Ireland's domestic tax residency rules, Pentair should not be Irish resident until January 1, 2021 (provided that there is no change in ownership and no major change in the nature or conduct of the business of the company before that date, in which case the residence tie-breaker should apply from the date of the change of ownership). Accordingly, we do not expect the change to the residence tie-breaker to have effect until January 1, 2021 at the earliest.

It is possible that in the future, whether as a result of a change in law or the practice of any relevant tax authority or as a result of any change in the conduct of our affairs, we could become, or be regarded as having become, resident in a jurisdiction other than the U.K. If Pentair ceases to be resident in the U.K. and becomes resident in another jurisdiction, it may be subject to U.K. exit charges, and could become liable for additional tax charges in the other jurisdiction (including dividend withholding taxes or corporate income tax charges). If Pentair were to be treated as resident in more than one jurisdiction, it could be subject to taxation in multiple jurisdictions. If, for example, Pentair were considered to be a tax resident of Ireland, we could become liable for Irish corporation tax, and any dividends paid by it could be subject to Irish dividend withholding tax.

Irish law differs from the laws in effect in the United States 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, we are governed by the Irish Companies Act, which differs 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 our 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 our ordinary shares may be subject to Irish stamp duty.
Transfers of our ordinary shares effected by means of the transfer of book entry interests in the Depository Trust Company (“DTC”) will not be subject to Irish stamp duty. However, if you hold your ordinary shares directly rather than beneficially through DTC, any transfer of your ordinary shares could be subject to Irish stamp duty (currently at the rate of 1 percent of the higher of the price paid or the market value of the shares acquired). Payment of Irish stamp duty is generally a legal obligation of the transferee.

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 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 (i) may seek reimbursement from the buyer, (ii) will have a lien against the 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 our shares has been paid unless one or both of such parties is otherwise notified by us.

Our ordinary shares, received by means of a gift or inheritance could be subject to Irish capital acquisitions tax.
Irish capital acquisitions tax (“CAT”) could apply to a gift or inheritance of our ordinary shares irrespective of the place of residence, ordinary residence or domicile of the parties. This is because our shares will be regarded as property situated in Ireland. The person who receives the gift or inheritance has primary liability for CAT. Gifts and inheritances passing between spouses are exempt from CAT. Children have a tax-free threshold of €335,000 per lifetime in respect of taxable gifts or inheritances received from their parents for periods on or after October 9, 2019.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

Our principal office is located in leased premises in London, U.K., and our management office in the U.S. is located in leased premises in Minneapolis, Minnesota.

Our operations are conducted in facilities throughout the world. These facilities house manufacturing and distribution operations, as well as sales and marketing, engineering and administrative offices. The following is a summary of our principal properties as of December 31, 2019, including manufacturing, distribution, sales offices and service centers:

		No. of Facilities			
	Location	Manufacturing	Distribution	Sales and Corporate Offices	Service Centers
Aquatic Systems	U.S. and 4 foreign countries	4	7	9	—
Filtration Solutions	U.S. and 19 foreign countries	23	7	27	—
Flow Technologies	U.S. and 10 foreign countries	10	10	4	10
Corporate	U.S. and 3 foreign countries	—	—	5	—
Total		37	24	45	10

We believe that our production facilities as well as the related machinery and equipment, are well maintained and suitable for their purpose and are adequate to support our businesses.

ITEM 3. LEGAL PROCEEDINGS

We have been, and in the future may be, made parties to a number of actions filed or have been, and in the future may be, given notice of potential claims relating to the conduct of our business, including those relating to commercial or contractual disputes with suppliers, customers or parties to acquisitions and divestitures, intellectual property matters, environmental, safety and health matters, product liability, the use or installation of our products, consumer matters, and employment and labor matters.

While we believe that a material impact on our consolidated financial position, results of operations or cash flows from any such future claims or potential claims is unlikely, given the inherent uncertainty of litigation, a remote possibility exists that a future adverse ruling or unfavorable development could result in future charges that could have a material adverse impact. We do and will continue to periodically reexamine our estimates of probable liabilities and any associated expenses and receivables and make appropriate adjustments to such estimates based on experience and developments in litigation. As a result, the current estimates of the potential impact on our consolidated financial position, results of operations and cash flows for the proceedings and claims described in the notes to our consolidated financial statements could change in the future.

Asbestos matters

Our subsidiaries and numerous other unaffiliated companies 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 attached to or used with asbestos-containing components manufactured by third-parties. Each case typically names between several dozen to more than a hundred corporate defendants. Our historical strategy has been to mount a vigorous defense aimed at having unsubstantiated suits dismissed, and, where appropriate, settling suits before trial. Although a large percentage of litigated suits have been dismissed, we cannot predict the extent to which we will be successful in resolving lawsuits in the future.

As of December 31, 2019, there were approximately 730 claims outstanding against our subsidiaries. This amount is not adjusted for claims that are not actively being prosecuted, identified incorrect defendants, or duplicated other actions, which would ultimately reflect our current estimate of the number of viable claims made against us, our affiliates, or entities for which we assumed responsibility in connection with acquisitions or divestitures. In addition, the amount does not include certain claims pending against third parties for which we have been provided an indemnification.

Environmental matters

We have been named as defendant, target or a PRP in a number of environmental clean-ups relating to our current or former business units. We have disposed of a number of businesses in recent years and in certain cases, we have retained responsibility and potential liability for certain environmental obligations. We have received claims for indemnification from certain purchasers. We may be named as a PRP at other sites in the future for existing business units, as well as both divested and acquired businesses. In addition to cleanup actions brought by governmental authorities, private parties could bring personal injury or other claims due to the presence of, or exposure to, hazardous substances.

Certain environmental laws impose liability on current or previous owners or operators of real property for the cost of removal or remediation of hazardous substances at their properties or at properties at which they have disposed of hazardous substances. We have projects underway at several current and former manufacturing facilities to investigate and remediate environmental contamination resulting from our past operations or by other businesses that previously owned or used the properties.

Our accruals for environmental matters are recorded on a site-by-site basis when it is probable that a liability has been incurred and the amount of the liability can be reasonably estimated, based on current law and existing technologies. It can be difficult to estimate reliably the final costs of investigation and remediation due to various factors. In our opinion, the amounts accrued are appropriate based on facts and circumstances as currently known. As of December 31, 2019, our recorded reserves for environmental matters were not material. We do not anticipate our remaining environmental conditions will have a material adverse effect on our financial position, results of operations or cash flows. However, unknown conditions, new details about existing conditions or changes in environmental requirements may give rise to environmental liabilities that will exceed the amount of our current reserves and could have a material adverse effect in the future.

Product liability claims

We are subject to various product liability lawsuits and personal injury claims. A substantial number of these lawsuits and claims are insured and accrued for by Penwald, our captive insurance subsidiary. See discussion in ITEM 1 and ITEM 8, Note 1 of the Notes to Consolidated Financial Statements — Insurance subsidiary. Penwald records a liability for these claims based on actuarial projections of ultimate losses. For all other claims, accruals covering the claims are recorded, on an undiscounted basis, when it is probable that a liability has been incurred and the amount of the liability can be reasonably estimated based on existing information. The accruals are adjusted periodically as additional information becomes available. We have not experienced significant unfavorable trends in either the severity or frequency of product liability lawsuits or personal injury claims.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

INFORMATION ABOUT OUR EXECUTIVE OFFICERS

Current executive officers of Pentair plc, their ages, current position and their business experience during at least the past five years are as follows:

Name	Age	Current Position and Business Experience
John L. Stauch	55	President and Chief Executive Officer since 2018; Executive Vice President and Chief Financial Officer 2007 - 2018; Chief Financial Officer of the Automation and Control Systems unit of Honeywell International Inc. 2005 - 2007; Vice President, Finance and Chief Financial Officer of the Sensing and Controls unit of Honeywell International Inc. 2004 - 2005; Vice President, Finance and Chief Financial Officer of the Automation & Control Products unit of Honeywell International Inc. 2002 - 2004; Chief Financial Officer and IT Director of PerkinElmer Optoelectronics, a unit of PerkinElmer, Inc., 2000 - 2002; Various executive, investor relations and managerial finance positions with Honeywell International Inc. and its predecessor AlliedSignal Inc. 1994 - 2000.
Kelly A. Baker	50	Executive Vice President and Chief Human Resources Officer since 2018; Chief Human Resources Officer, Water segment, 2017 - 2018; Chief Human Resources Officer of Patterson Companies, Inc. (a dental and animal health industry product and technology distributor) 2016 - 2017; Vice President of Human Resources, North America Retail and Marketing Function of General Mills (a multinational manufacturer and marketer of branded consumer foods) 2014 - 2016; Vice President of Human Resources, Corporate & Global Business Solutions of General Mills 2009 - 2014; Vice President of Diversity & Inclusion of General Mills 2005 - 2009; Various Human Resources leadership positions at General Mills 1995 - 2005.
Mark C. Borin	52	Executive Vice President and Chief Financial Officer since 2018 and Chief Accounting Officer since 2019. As previously announced, Mr. Borin intends to resign from Pentair in connection with accepting an operational leadership opportunity at a private, employee-owned company, and he plans to remain in his role with Pentair through the search process and to assist with an orderly transition. Senior Vice President and Chief Accounting Officer 2008 - 2018 and Treasurer 2015 - 2018; Partner in the audit practice of the public accounting firm KPMG LLP 2000 - 2008; Various positions in the audit practice of KPMG LLP 1989 - 2000.
Karl R. Frykman	59	Executive Vice President and Chief Operating Officer since 2018; Senior Vice President and President, Water segment 2017 - 2018; President, Water Quality Systems Global business unit 2007 - 2016; President, National Pool Tile group 1998- 2007; Vice President of Operations, American Products group 1995 - 1998; Vice President of Anthony Pools, 1990 - 1995; Vice President of Poolsaver, 1988 - 1990.
John H. Jacko	62	Executive Vice President and Chief Growth Officer since 2018; Senior Vice President and Chief Marketing Officer 2017 - 2018; Vice President and Chief Marketing Officer of Kennametal Inc. (a global supplier of tooling, engineered components and advanced materials) 2007 - 2016; Senior Vice President and Chief Marketing Officer of Flowserve Corporation, 2002 - 2007; Vice President of Marketing and Customer Management of Flowserve Corporation 2001 - 2002; Various business leadership positions of Honeywell Aerospace 1995 - 2001.
Karla C. Robertson	49	Executive Vice President, General Counsel and Secretary since 2018; General Counsel, Water segment 2017 - 2018; Executive Vice President, General Counsel and Corporate Secretary of SUPERVALU Inc. (a wholesaler and retailer of grocery products) 2013 - 2017; Vice President, Employment, Compensation and Benefits Law of SUPERVALU Inc. 2012 - 2013; Director, Employment Law of SUPERVALU Inc. 2011 - 2012; Senior Counsel, Employment Law of SUPERVALU Inc. 2009 - 2011; Senior Employee Relations Counsel of Target Corporation 2006 - 2008; Associate, Faegre & Benson LLP 2000 - 2005; Judicial Clerk, United States District Court for the Southern District of Iowa 1998 - 2000.

Name	Age	Current Position and Business Experience
Philip M. Rolchigo	58	Executive Vice President and Chief Technology Officer since 2018; Chief Technology Officer 2017 - 2018; Vice President of Technology 2015 - 2017; Vice President of Engineering 2007 - 2015; Business Development Director of Water Technologies business of GE Global Research Center 2006 - 2007; Director of Technology of GE Water & Process Technologies 2003 - 2006; Chief Technology Officer of Osmonics 2000 - 2003; Vice President of Research & Development of Osmonics 1998 - 2000; Chief Technology Officer of Membrex 1991 - 1998.
James P. Wamsley	43	Executive Vice President and Chief Supply Chain Officer since 2019. Mr. Wamsley informed Pentair of his intention to resign from Pentair as of February 26, 2020. Executive Vice President Global Operations of the Power Tools group of Milwaukee Tool (a manufacturer and marketer of professional power tools, hand tools and accessories) 2008 - 2019; Sourcing Manager of Industrial Accessories division of Black & Decker Corporation 2007 - 2008; Operations Manager of the Linear Edge business of Black & Decker Corporation 2005 - 2007; Engineering Manager of the Linear Edge business of Black & Decker Corporation 2004 - 2006.

PART II

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

Our ordinary shares are listed for trading on the New York Stock Exchange ("NYSE") under the symbol "PNR." As of December 31, 2019, there were 14,468 shareholders of record.

Pentair has paid 176 consecutive quarterly cash dividends, including most recently a dividend of $0.18 per share in the fourth quarter of 2019. On December 9, 2019, Pentair's Board of Directors approved a 6 percent increase in the company's regular quarterly cash dividend rate (from $0.18 per share to $0.19 per share) that was paid on February 7, 2020 to shareholders of record at the close of business on January 24, 2020. 2020 will mark the 44th consecutive year that Pentair has increased its dividend.

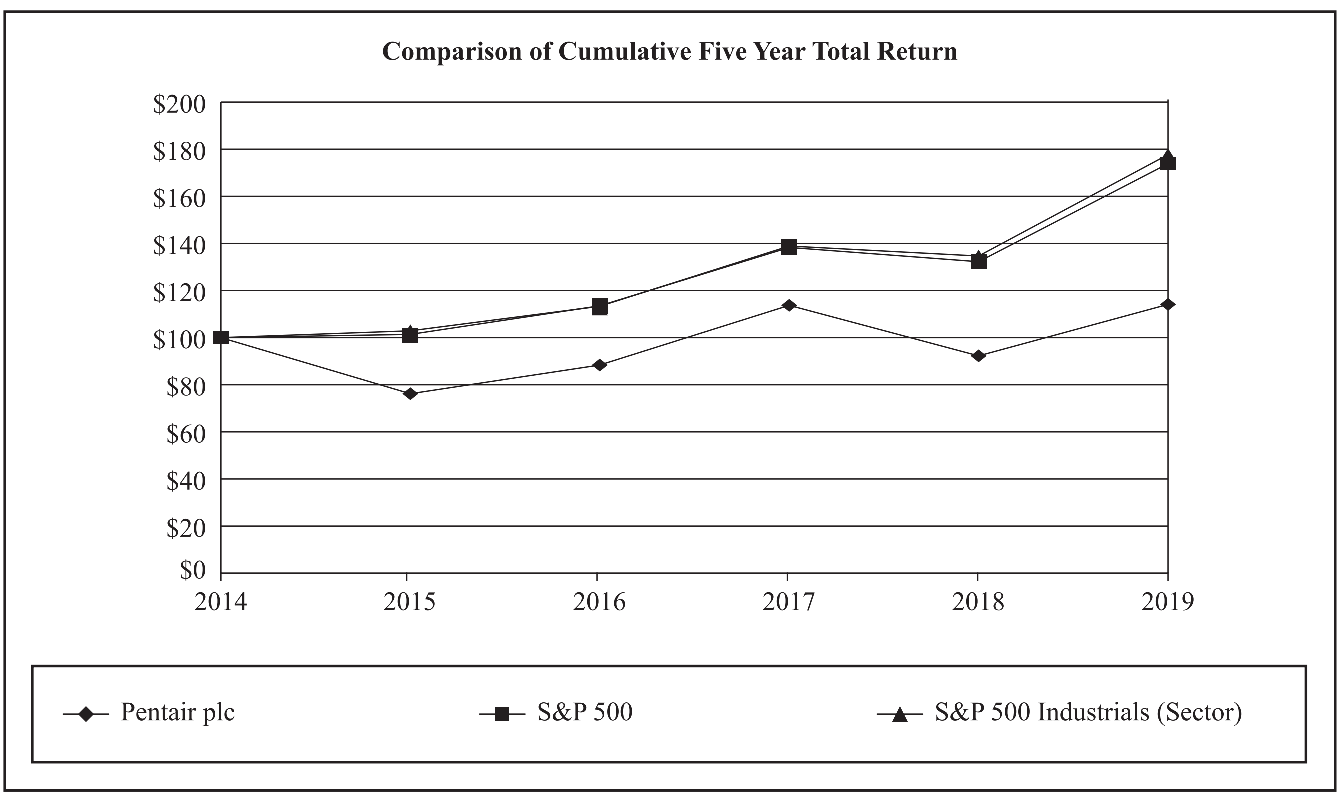
The timing, declaration and payment of future dividends to holders of our ordinary shares will depend upon many factors, including our financial condition and results of operations, the capital requirements of our businesses, industry practice and any other relevant factors.

Share Performance Graph

The following information under the caption "Share Performance Graph" in this ITEM 5 of this Annual Report on Form 10-K 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, as amended (the "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, as amended, or the Exchange Act, except to the extent we specifically incorporate it by reference into such a filing.

The following graph sets forth the cumulative total shareholder return on our ordinary shares for the last five years, assuming the investment of $100 on December 31, 2014 and the reinvestment of all dividends since that date to December 31, 2019. The graph also contains for comparison purposes the S&P 500 Index and the S&P 500 Industrials Index, assuming the same investment level and reinvestment of dividends.

By virtue of our market capitalization, we are a component of the S&P 500 Index. On the basis of our size and diversity of businesses, we believe the S&P 500 Industrials Index is an appropriate published industry index for comparison purposes.



Company / Index	Base Period December 2014	INDEXED RETURNS Years ended December 31 2015	2016	2017	2018	2019
Pentair plc	**$ 100**	$ 76.19	$ 88.37	$ 113.71	$ 92.26	$ 114.11
S&P 500 Index	**100**	101.38	113.51	138.29	132.23	173.86
S&P 500 Industrials Index	**100**	102.90	113.31	138.88	134.65	177.70

Purchases of Equity Securities

The following table provides information with respect to purchases we made of our ordinary shares during the fourth quarter of 2019:

	(a) Total number of shares purchased	(b) Average price paid per share	(c) Total number of shares purchased as part of publicly announced plans or programs	(d) Dollar value of shares that may yet be purchased under the plans or programs
October 1 – October 26	2,106	$ 36.72	—	$ 250,000,187
October 27 – November 23	867	38.83	—	250,000,187
November 24 – December 31	142	44.76	—	250,000,187
Total	3,115		—	

(a) The purchases in this column include 2,106 shares for the period October 1 – October 26, 867 shares for the period October 27 – November 23, and 142 shares for the period November 24 – December 31 deemed surrendered to us by participants in our 2012 Stock and Incentive Plan (the "2012 Plan") and earlier stock incentive plans that are now outstanding under the 2012 Plan (collectively the "Plans") to satisfy the exercise price or withholding of tax obligations related to the exercise of stock options and vesting of restricted shares.

(b) The average price paid in this column includes shares repurchased as part of our publicly announced plans and shares deemed surrendered to us by participants in the Plans to satisfy the exercise price for the exercise price of stock options and withholding tax obligations due upon stock option exercises and vesting of restricted and performance shares.

(c) The number of shares in this column represents the number of shares repurchased as part of our publicly announced plans to repurchase our ordinary shares up to a maximum dollar limit authorized by the Board of Directors, discussed below.

(d) In May 2018, the Board of Directors authorized the repurchase of our ordinary shares up to a maximum dollar limit of $750.0 million. The 2018 authorization expires on May 31, 2021. We have $250.0 million remaining availability for repurchases under this authorization. From time to time, we may enter into a Rule 10b5-1 trading plan for the purpose of repurchasing shares under this authorization.

ITEM 6. SELECTED FINANCIAL DATA

The following table sets forth our selected historical financial data for the five years ended December 31, 2019.

	Years ended December 31				
In millions, except per-share amounts	**2019**	**2018**	**2017**	**2016**	**2015**
Consolidated statements of operations and comprehensive income					
Net sales	$ 2,957.2	$ 2,965.1	$ 2,845.7	$ 2,780.6	$ 2,812.4
Operating income	432.5	436.7	378.3	354.4	304.7
Net income from continuing operations	361.7	321.7	114.1	178.2	170.9
Per ordinary share					
Basic					
Earnings per ordinary share from continuing operations	$ 2.14	$ 1.83	$ 0.63	$ 0.98	$ 0.95
Weighted average ordinary shares	169.4	175.8	181.7	181.3	180.3
Diluted					
Earnings per ordinary share from continuing operations	$ 2.12	$ 1.81	$ 0.62	$ 0.97	$ 0.94
Weighted average ordinary shares	170.4	177.3	183.7	183.1	182.6
Cash dividends declared and paid per ordinary share	$ 0.72	$ 1.05	$ 1.38	$ 1.34	$ 1.28
Cash dividends declared and unpaid per ordinary share	0.19	0.18	0.35	0.345	0.33
Consolidated balance sheets					
Total assets	$ 4,139.5	$ 3,806.5	$ 8,633.7	$ 11,534.8	$ 11,833.4
Total debt	1,029.1	787.6	1,440.7	4,279.2	4,685.8
Total equity	1,953.9	1,836.1	5,037.8	4,254.4	4,008.8

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

Forward-looking statements

This report contains statements that we believe to be "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995. All statements, other than statements of historical fact are forward-looking statements. Without limitation, any statements preceded or followed by or that include the words "targets," "plans," "believes," "expects," "intends," "will," "likely," "may," "anticipates," "estimates," "projects," "should," "would," "positioned," "strategy," "future" or words, phrases or terms of similar substance or the negative thereof, are forward-looking statements. These forward-looking statements are not guarantees of future performance and are subject to risks, uncertainties, assumptions and other factors, some of which are beyond our control, which could cause actual results to differ materially from those expressed or implied by such forward-looking statements. These factors include overall global economic and business conditions impacting our business, including the strength of housing and related markets; demand, competition and pricing pressures in the markets we serve; volatility in currency exchange rates; failure of markets to accept new product introductions and enhancements; the ability to successfully identify, finance, complete and integrate acquisitions; the ability to successfully integrate the Aquion, Inc. ("Aquion") and Pelican Water Systems ("Pelican") acquisitions; the ability to achieve the benefits of our restructuring plans and cost reduction initiatives; risks associated with operating foreign businesses; the impact of material cost and other inflation; the impact of seasonality of sales and weather conditions; our ability to comply with laws and regulations; the impact of changes in laws, regulations and administrative policy, including those that limit U.S. tax benefits or impact trade agreements and tariffs; the outcome of litigation and governmental proceedings; the potential negative impact of the coronavirus (COVID-19) outbreak on our business; and the ability to achieve our long-term strategic operating goals. Additional information concerning these and other factors is contained in our filings with the U.S. Securities and Exchange Commission (the "SEC"), including this Annual Report on Form 10-K. All forward-looking statements speak only as of the date of this report. Pentair assumes no obligation, and disclaims any obligation, to update the information contained in this report.

Overview

Pentair plc and its consolidated subsidiaries ("we," "us," "our," "Pentair" or the "Company") is a pure play water industrial manufacturing company and in 2019 we were comprised of three reporting segments: Aquatic Systems, Filtration Solutions and Flow Technologies. We classify our operations into business segments based primarily on types of products offered and markets served. For the year ended December 31, 2019, the Aquatic Systems, Filtration Solutions and Flow Technologies segments represented approximately 33%, 36% and 31% of total revenues, respectively. Commencing with the first quarter of 2020, we revised our segments, going from three segments to two with the two revised segments named Consumer Solutions and Industrial & Flow Technologies. The discussions below reporting on prior periods reflect the previous segmentation, but the descriptions of our businesses below continue to apply in their re-segmented form. Additional information regarding this re-segmentation is found under the section titled "New Segmentation" in ITEM 1 of this Form 10-K.

Although our jurisdiction of organization is Ireland, we manage our affairs so that we are centrally managed and controlled in the United Kingdom (the "U.K.") and therefore have our tax residency in the U.K.

On April 28, 2017, we completed the sale of the Valves & Controls business to Emerson Electric Co. for $3.15 billion. The sale resulted in a gain of $181.1 million, net of tax. The results of the Valves & Controls business have been presented as discontinued operations for all periods presented. The Valves & Controls business was previously disclosed as a stand-alone reporting segment.

On April 30, 2018, we completed the separation of our Electrical business from the rest of Pentair (the "Separation") by means of a dividend in specie of the Electrical business, which was effected by the transfer of the Electrical business from Pentair to nVent and the issuance by nVent of nVent ordinary shares directly to Pentair shareholders (the "Distribution"). We did not retain an equity interest in nVent. The results of the Electrical business have been presented as discontinued operations for all periods presented. The Electrical business was previously disclosed as a stand-alone reporting segment.

In February 2019, as part of Filtration Solutions, we completed the acquisitions of Aquion and Pelican for $163.4 million and $121.1 million, respectively, in cash, net of cash acquired. Aquion offers a diverse line of water conditioners, water filters, drinking-water purifiers, ozone and ultraviolet disinfection systems, reverse osmosis systems and acid neutralizers for the residential and commercial water treatment industry. Pelican provides residential whole home water treatment systems.

Key trends and uncertainties regarding our existing business

The following trends and uncertainties affected our financial performance in 2019, and will likely impact our results in the future:

- During 2019, we executed certain business restructuring initiatives aimed at reducing our fixed cost structure and realigning our business. We expect these actions will contribute to margin growth in 2020.

- We have identified specific product and geographic market opportunities that we find attractive and continue to pursue, both within and outside the U.S. We are reinforcing our businesses to more effectively address these opportunities through research and development and additional sales and marketing resources. Unless we successfully penetrate these markets, our core sales growth will likely be limited or may decline.

- We have experienced material and other cost inflation. We strive for productivity improvements, and we implement increases in selling prices to help mitigate this inflation. We expect the current economic environment will result in continuing price volatility for many of our raw materials, and we are uncertain as to the timing and impact of these market changes.

- Proposed regulations as part of the Tax Cuts and Jobs Act, enacted in the U.S. in December 2017, may place limitations on the deductibility of certain interest expense for U.S. tax purposes. These proposed regulations could materially adversely affect our financial condition, results of operations, cash flows or our effective tax rate in future reporting periods when enacted.

- Our businesses utilize a global supply chain including materials, components and products sourced directly or indirectly from China and from other countries and geographic regions potentially impacted by the coronavirus outbreak, and 3-4% of our total revenues are generated from sales to customers in China. Our overall business could be negatively impacted by the coronavirus outbreak, but the significance of the impact of the coronavirus outbreak on our business and the duration for which it may have an impact cannot be determined at this time.

In 2020, our operating objectives include the following:

- Accelerating Pentair Integrated Management System (“PIMS”), with specific focus on the area of commercial excellence and acquisition integrations;

- Delivering our growth priorities through new products and global and market expansion, specifically in the areas of pool and residential and commercial filtration solutions;

- Optimizing our technological capabilities to increasingly generate innovative new products and advance digital transformation; and

- Building a high performance growth culture and delivering on our commitments while living our Win Right values.

CONSOLIDATED RESULTS OF OPERATIONS

The consolidated results of operations were as follows:

	Years ended December 31			% / point change	
In millions	2019	2018	2017	2019 vs 2018	2018 vs 2017
Net sales	$ 2,957.2	$ 2,965.1	$ 2,845.7	(0.3)%	4.2 %
Cost of goods sold	1,905.7	1,917.4	1,858.2	(0.6)%	3.2 %
Gross profit	1,051.5	1,047.7	987.5	0.4 %	6.1 %
% of net sales	*35.6%*	*35.3%*	*34.7%*	*0.3 pts*	*0.6 pts*
Selling, general and administrative	540.1	534.3	536.0	1.1 %	(0.3)%
% of net sales	*18.3%*	*18.0%*	*18.8%*	*0.3 pts*	*(0.8) pts*
Research and development	78.9	76.7	73.2	2.9 %	4.8 %
% of net sales	*2.7%*	*2.6%*	*2.6%*	*0.1 pts*	*— pts*
Operating income	432.5	436.7	378.3	(1.0)%	15.4 %
% of net sales	*14.6%*	*14.7%*	*13.3%*	*(0.1) pts*	*1.4 pts*
(Gain) loss on sale of businesses	(2.2)	7.3	4.2	N.M.	N.M.
Loss on early extinguishment of debt	—	17.1	101.4	N.M.	N.M.
Net interest expense	30.1	32.6	87.3	(7.7)%	(62.7)%
Other (income) expense	(2.9)	(0.1)	12.6	N.M.	N.M.
Income from continuing operations before income taxes	407.5	379.8	172.8	N.M.	N.M.
Provision for income taxes	45.8	58.1	58.7	(21.2)%	(1.0) %
Effective tax rate	*11.2%*	*15.3%*	*34.0%*	*(4.1) pts*	*(18.7) pts*

N.M. Not Meaningful

Net sales

The components of the consolidated net sales change were as follows:

	2019 vs 2018	2018 vs 2017
Volume	(3.9)%	3.6%
Price	2.6	1.2
Core growth	(1.3)	4.8
Acquisition (divestiture)	2.5	(1.2)
Currency	(1.5)	0.6
Total	(0.3)%	4.2%

The 0.3 percent decrease in consolidated net sales in 2019 from 2018 was primarily the result of:

- volume declines across all three reportable segments; and
- unfavorable foreign currency effects.

This decrease was partially offset by:

- selective increases in selling prices to mitigate inflationary cost increases; and
- the acquisitions of the Aquion and Pelican businesses in 2019.

The 4.2 percent increase in consolidated net sales in 2018 from 2017 was primarily the result of:

- core sales increases across all three reportable segments, primarily driven by increased sales in the residential and commercial businesses;
- selective increases in selling prices to mitigate inflationary cost increases; and
- favorable foreign currency effects during the year ended December 31, 2018.

This increase was partially offset by:

- sales declines due to the sale of certain businesses during the year ended December 31, 2018.

Gross profit
The 0.3 percentage point increase in gross profit as a percentage of net sales in 2019 from 2018 was primarily the result of:

- selective increases in selling prices across all three reportable segments to mitigate inflationary cost increases; and
- higher contribution margin as a result of savings generated from our PIMS initiatives, including lean and supply management practices.

This increase was partially offset by:

- unfavorable mix as a result of a core sales growth decrease in the higher margin Aquatic Systems segment; and
- inflationary increases related to raw materials and labor costs.

The 0.6 percentage point increase in gross profit as a percentage of net sales in 2018 from 2017 was primarily the result of:

- selective increases in selling prices across all three reportable segments to mitigate inflationary cost increases;
- favorable mix in the Filtration Solutions segment; and
- higher contribution margin as a result of savings generated from our PIMS initiatives, including lean and supply management practices.

This increase was partially offset by:

- inflationary increases related to raw materials and labor costs.

Selling, general and administrative ("SG&A")
The 0.3 percentage point increase in SG&A expense as a percentage of net sales in 2019 from 2018 and was driven by:

- decreased sales volumes, which resulted in decreased leverage on fixed operating expenses;
- investments in sales and marketing to drive growth; and
- asset impairments of $21.2 million in 2019, compared to $12.0 million in 2018.

This increase was partially offset by:

- restructuring and other costs of $21.0 million in 2019, compared to $31.8 million in 2018;
- duplicative corporate costs of $11.0 million in 2018 resulting from the Separation of nVent that did not recur in 2019; and
- lower annual performance based cash incentive awards in 2019 compared to 2018.

The 0.8 percentage point decrease in SG&A expense as a percentage of net sales in 2018 from 2017 was driven by:

- savings generated from restructuring and other lean initiatives; and
- higher sales resulting in increased leverage.

This decrease was partially offset by:

- restructuring and other costs of $31.8 million in 2018, compared to $28.2 million in 2017;
- the reversal of a $13.3 million indemnification liability in 2017 that did not recur in 2018; and
- investments in sales and marketing to drive growth.

Net interest expense
The 7.7 percent and 62.7 decreases in net interest expense in 2019 from 2018 and in 2018 from 2017, respectively were the result of:

- lower average outstanding debt levels during the first half of 2019 compared to 2018. In June 2018, the proceeds from the Separation were utilized to repay the remaining $255.3 million aggregate principal amount of our 2.9% fixed rate senior notes due 2018 and for the early extinguishment of €363.4 million aggregate principal amount of our 2.45% senior notes due 2019.

Loss on early extinguishment of debt
In 2018, we redeemed the remaining $255.3 million aggregate principal amount of our 2.9% fixed rate senior notes due 2018 and completed a cash tender offer in the amount of €363.4 million aggregate principal amount of our 2.45% senior notes due 2019. All costs associated with the repurchases of debt were recorded as a *Loss on the early extinguishment of debt*, including $16.0 million premium paid on early extinguishment and $1.1 million of unamortized deferred financing costs.

Provision for income taxes
The 4.1 percentage point decrease in the effective tax rate in 2019 from 2018 was primarily due to:

- the mix of global earnings;
- the impact of lower nondeductible interest expense allocated to continuing operations in 2019 compared to 2018;
- the unfavorable tax impact of restructuring costs in 2018 related to jurisdictions with low tax benefits that did not recur in 2019; and
- a decrease in valuation allowances during 2019.

The 18.7 percentage point decrease in the effective tax rate in 2018 from 2017 was primarily due to:

- the mix of global earnings, including the impact of U.S. Tax Reform; and
- the impact of lower nondeductible interest expense allocated to continuing operations in 2018 compared to 2017.

SEGMENT RESULTS OF OPERATIONS

This summary that follows provides a discussion of the results of operations of each of our 2019 three reportable segments (Aquatic Systems, Filtration Solutions and Flow Technologies). Each of these segments were comprised of various product offerings that serve multiple end markets.

We evaluate performance based on sales and segment income and use a variety of ratios to measure performance of our reporting segments. Segment income represents equity income of unconsolidated subsidiaries and operating income exclusive of intangible amortization, certain acquisition related expenses, costs of restructuring activities, impairments and other unusual non-operating items.

Aquatic Systems
The net sales and segment income for Aquatic Systems were as follows:

	Years ended December 31			**% / point change**	
In millions	**2019**	**2018**	**2017**	**2019 vs 2018**	**2018 vs 2017**
Net sales	$ 985.3	$ 1,026.1	$ 939.6	(4.0)%	9.2 %
Segment income	268.9	277.6	254.1	(3.1)%	9.2 %
% of net sales	*27.3%*	*27.1%*	*27.0%*	*0.2 pts*	*0.1 pts*

Net sales
The components of the change in Aquatic Systems net sales were as follows:

	2019 vs 2018	2018 vs 2017
Volume	(7.0)%	8.2%
Price	4.2	2.3
Core growth	(2.8)	10.5
Acquisition (divestiture)	(0.8)	(1.2)
Currency	(0.4)	(0.1)
Total	(4.0)%	9.2%

The 4.0 percent decrease in net sales for Aquatic Systems in 2019 from 2018 was primarily the result of:

- sales volume declines due to cold, wet weather during the first half of 2019 in key markets;
- higher than anticipated inventory levels in some of our key distribution channels impacting our residential and commercial businesses during the first nine months of 2019;
- divestitures in our aquaculture and residential pool businesses; and
- unfavorable foreign currency effects compared to the same periods of the prior year.

This decrease was partially offset by:

- selective increases in selling prices to mitigate inflationary cost increases.

The 9.2 percent increase in net sales for Aquatic Systems in 2018 from 2017 was primarily the result of:

- core sales growth related to higher sales of certain pool products primarily serving North American residential housing; and
- selective increases in selling prices to mitigate inflationary cost increases.

This increase was partially offset by

- sales declines due to the divestiture of certain businesses in 2018.

Segment income
The components of the change in Aquatic Systems segment income from the prior period were as follows:

	2019	2018
Growth	(1.7) pts	1.4 pts
Acquisition	0.2	0.4
Inflation	(2.7)	(2.9)
Productivity/Price	4.4	1.2
Total	0.2 pts	0.1 pts

The 0.2 percentage point increase in segment income for Aquatic Systems as a percentage of net sales in 2019 from 2018 was primarily the result of:

- selective increases in selling prices to mitigate inflationary cost increases; and
- productivity and cost savings generated from PIMS initiatives, including lean and supply management practices.

This increase was partially offset by:

- declines in sales volume and unfavorable sales mix;
- increased investment in both research and development and sales and marketing to drive growth; and
- inflationary increases related to raw material and labor costs.

The 0.1 percentage point increase in segment income for Aquatic Systems as a percentage of net sales in 2018 from 2017 was primarily the result of:

- core sales growth contributions to income;
- selective increases in selling prices to mitigate inflationary cost increases; and
- cost savings generated from PIMS initiatives including lean and supply management practices.

This increase was partially offset by:

- inflationary increases related to raw materials and labor costs.

Filtration Solutions

The net sales and segment income for Filtration Solutions were as follows:

	Years ended December 31			% / point change	
In millions	2019	2018	2017	2019 vs 2018	2018 vs 2017
Net sales	$ 1,066.9	$ 1,001.0	$ 990.6	6.6 %	1.0 %
Segment income	171.3	168.5	154.5	1.7 %	9.1 %
% of net sales	*16.1%*	*16.8%*	*15.6%*	*(0.7) pts*	*1.2 pts*

Net sales

The components of the change in Filtration Solutions net sales were as follows:

	2019 vs 2018	2018 vs 2017
Volume	(1.9)%	0.3%
Price	1.2	0.5
Core growth	(0.7)	0.8
Acquisition (divestiture)	9.7	(0.9)
Currency	(2.4)	1.1
Total	6.6 %	1.0%

The 6.6 percent increase in net sales for Filtration Solutions in 2019 from 2018 was primarily the result of:

- increased sales due to the acquisitions of Aquion and Pelican in the first quarter of 2019; and
- selective increases in selling prices to mitigate inflationary cost increases.

This increase was partially offset by:

- decreased core sales volume in our residential and commercial businesses, partially due to lower component sales as Aquion sales are now considered intercompany; and
- unfavorable foreign currency effects.

The 1.0 percent increase in net sales for Filtration Solutions in 2018 from 2017 was primarily the result of:

- increased sales volume in our commercial and industrial businesses;
- selective increases in selling prices to mitigate inflationary cost increases; and
- favorable foreign currency effects.

This increase was partially offset by:

- sales volume declines in our residential vertical; and
- sales declines due to the divestiture of certain businesses in 2018.

Segment income
The components of the change in Filtration Solutions segment income from the prior period were as follows:

	2019	2018
Growth	0.6 pts	1.7 pts
Acquisition	0.1	0.1
Inflation	(2.7)	(2.5)
Productivity/Price	1.3	1.9
Total	(0.7) pts	1.2 pts

The 0.7 percentage point decrease in segment income for Filtration Solutions as a percentage of net sales in 2019 from 2018 was primarily the result of:

- inflationary increases related to raw material and labor costs.

This decrease was partially offset by:

- selective increases in selling prices to mitigate inflationary cost increases;
- the impact of the Aquion and Pelican acquisitions; and
- favorable mix.

The 1.2 percentage point increase in segment income for Filtration Solutions as a percentage of net sales in 2018 from 2017 was primarily the result of:

- core growth contributions to income resulting in favorable mix;
- selective increases in selling prices to mitigate inflationary cost increases; and
- cost savings generated from PIMS initiatives including lean and supply management practices.

This increase was partially offset by:

- inflationary increases related to raw material and labor costs.

Flow Technologies
The net sales and segment income for Flow Technologies were as follows:

	Years ended December 31			% / point change	
In millions	2019	2018	2017	2019 vs 2018	2018 vs 2017
Net sales	$ 903.6	$ 936.7	$ 914.2	(3.5)%	2.5 %
Segment income	138.4	145.6	140.6	(4.9)%	3.6 %
% of net sales	*15.3%*	*15.5%*	*15.4%*	*(0.2) pts*	*0.1 pts*

Net sales
The components of the change in Flow Technologies net sales were as follows:

	2019 vs 2018	2018 vs 2017
Volume	(2.8)%	2.3%
Price	2.4	0.9
Core growth	(0.4)	3.2
Acquisition (divestiture)	(1.6)	(1.3)
Currency	(1.5)	0.6
Total	(3.5)%	2.5%

The 3.5 percent decrease in Flow Technologies sales in 2019 from 2018 was primarily the result of:

- decreased sales volume in our agriculture-related business due to cold, wet weather in the first half of 2019;
- unfavorable foreign currency effects compared to the same period of the prior year; and
- the impact of divestitures in our agriculture-related business in Brazil and commercial flow business in Australia.

This decrease was partially offset by:

- selective increases in selling prices to mitigate inflationary cost increases.

The 2.5 percent increase in Flow Technologies sales in 2018 from 2017 was primarily the result of:

- core growth in our commercial and specialty businesses;
- selective increases in selling prices to mitigate inflationary cost increases; and
- favorable foreign currency effects during 2018;

This increase was partially offset by:

- sales declines due to the divestiture of certain businesses.

Segment income

The components of the change in Flow Technologies segment income from the prior period were as follows:

	2019	2018
Growth	(0.5) pts	0.8 pts
Acquisition (divestiture)	(0.2)	(0.1)
Inflation	(2.7)	(2.7)
Productivity/Price	3.2	2.1
Total	(0.2) pts	0.1 pts

The 0.2 percentage point decrease in segment income for Flow Technologies as a percentage of net sales in 2019 from 2018 was primarily the result of:

- inflationary increases related to raw material and labor costs; and
- decreased sales volumes in our residential, commercial and industrial businesses, which resulted in decreased leverage on operating expenses.

This decrease was partially offset by:

- selective increases in selling prices to mitigate inflationary cost increases; and
- increased productivity.

The 0.1 point increase in segment income for Flow Technologies as a percentage of sales in 2018 from 2017 was primarily the result of:

- higher core sales in our commercial and specialty businesses, which resulted in increased leverage on fixed operating expenses;
- selective increases in selling prices to mitigate inflationary cost increases; and
- cost control and savings generated from lean initiatives.

This increase was partially offset by:

- inflationary increases related to raw material and labor costs.

LIQUIDITY AND CAPITAL RESOURCES

We generally fund cash requirements for working capital, capital expenditures, equity investments, acquisitions, debt repayments, dividend payments and share repurchases from cash generated from operations, availability under existing committed revolving credit facilities and in certain instances, public and private debt and equity offerings. Our primary revolving credit facilities have generally been adequate for these purposes, although we have negotiated additional credit facilities or completed debt and equity offerings as needed to allow us to complete acquisitions. We generally issue commercial paper to fund our financing needs on a short-term basis and use our revolving credit facility as back-up liquidity to support commercial paper.

We are focusing on increasing our cash flow and repaying existing debt, while continuing to fund our research and development, marketing and capital investment initiatives. Our intent is to maintain investment grade credit ratings and a solid liquidity position.

We experience seasonal cash flows primarily due to seasonal demand in a number of markets. We generally borrow in the first quarter of our fiscal year for operational purposes, which usage reverses in the second quarter as the seasonality of our businesses peaks. End-user demand for pool and certain pumping equipment follows warm weather trends and is at seasonal highs from April to August. The magnitude of the sales spike is partially mitigated by employing some advance sale “early buy” programs (generally including extended payment terms and/or additional discounts). Demand for residential and agricultural water systems is also impacted by weather patterns, particularly by heavy flooding and droughts.

Operating activities

Cash provided by operating activities of continuing operations was $345.2 million in 2019, compared to $458.1 million in 2018 and $278.6 million in 2017.

The $345.2 million in net cash provided by operating activities of continuing operations in 2019 primarily reflects net income from continuing operations of $462.9 million, net of non-cash depreciation, amortization and asset impairment, partially offset by a negative impact of $105.4 million as a result of changes in net working capital and $20.9 million of pension and other post-retirement plan contributions, including $11.1 million of contributions made in conjunction with the termination of the Pentair Salaried Plan during 2019.

The $458.1 million in net cash provided by operating activities of continuing operations in 2018 primarily reflects net income from continuing operations of $435.4 million, net of non-cash depreciation, amortization, asset impairment and the loss on early extinguishment of debt, further increased by a positive impact $30.2 million as a result of changes in net working capital.

The $278.6 million in net cash provided by operating activities of continuing operations in 2017 primarily reflects net income from continuing operations of $318.3 million, net of non-cash depreciation, amortization, asset impairment and the loss on early extinguishment of debt, partially offset by a negative impact of $87.3 million as a result of changes in net working capital.

Investing activities

Cash used for investing activities of continuing operations was $331.9 million in 2019, compared to $61.7 million of cash used for investing activities of continuing operations in 2018 and $2,678.1 million of cash provided by investing activities of continuing operations in 2017.

Net cash used for investing activities of continuing operations in 2019 primarily reflects capital expenditures of $58.5 million and cash paid primarily for the Aquion and Pelican acquisitions, offset by $15.3 million of proceeds received from divestitures primarily related to our former aquaculture business.

Net cash used for investing activities of continuing operations in 2018 primarily reflects capital expenditures of $48.2 million and cash paid for the settlement of a working capital adjustment related to the sale of the Valves & Controls business.

Net cash provided by investing activities of continuing operations in 2017 primarily reflects the sale of the Valves & Controls business, partially offset by capital expenditures of $39.1 million and cash paid of $45.9 million to acquire a business as part of Filtration Solutions.

Financing activities

Cash used for financing activities was $17.1 million in 2019, compared to $407.9 million and $3,432.6 million in 2018 and 2017, respectively.

In 2019, net cash used for financing activities primarily relates to repayment of senior notes due in 2019 totaling $401.5 million, $150.0 million of share repurchases and payment of dividends of $122.7 million, partially offset by proceeds from long-term debt of $600.0 million and net receipts of commercial paper and revolving long-term debt of $51.5 million.

As described below, in 2018, we utilized $993.6 million of cash distributed from the Separation to repay commercial paper and revolving long-term debt and for the early extinguishment of certain series of fixed rate debt. Additionally, we repurchased $500.0 million of shares and made dividend payments of $187.2 million.

In 2017, net cash used for financing activities primarily related to the utilization of proceeds from the sale of the Valves & Controls business to repay our commercial paper and revolving long-term debt and for the early extinguishment of certain series of fixed rate debt. Additionally, we repurchased $200.0 million of shares and made dividend payments of $251.7 million.

In June 2019, Pentair, Pentair Finance S.à r.l. ("PFSA") and Pentair Investments Switzerland GmbH ("PISG") completed a public offering of $400.0 million aggregate principal amount of PFSA's 4.500% Senior Notes due 2029 (the "2029 Notes"). The 2029 Notes are fully and unconditionally guaranteed as to payment of principal and interest by Pentair and PISG. We used the net proceeds of the 2029 Notes to partially repay outstanding commercial paper.

In April 2018, Pentair, PISG, PFSA and Pentair, Inc. entered into a credit agreement, providing for an $800.0 million senior unsecured revolving credit facility with a term of five years (the "Senior Credit Facility"), with Pentair and PISG as guarantors and PFSA and Pentair, Inc. as borrowers. The Senior Credit Facility has a maturity date of April 25, 2023. Borrowings under the Senior Credit Facility bear interest at a rate equal to an adjusted base rate or the London Interbank Offered Rate, plus, in each case, an applicable margin. The applicable margin is based on, at PFSA's election, Pentair's leverage level or PFSA's public credit rating. In May 2019, PFSA executed an increase of the Senior Credit Facility by $100.0 million for a total commitment up to $900.0 million in the aggregate.

In December 2019, the Senior Credit Facility was amended to provide for the extension of term loans in an aggregate amount of $200.0 million (the "Term Loans"). The Term Loans are in addition to the Senior Credit Facility commitment. In addition, PFSA has the option to further increase the Senior Credit Facility in an aggregate amount of up to $300.0 million, through a combination of increases to the total commitment amount of the Senior Credit Facility and/or one or more tranches of term loans in addition to the Term Loans, subject to customary conditions, including the commitment of the participating lenders.

As of December 31, 2019, total availability under the Senior Credit Facility was $746.4 million.

PFSA is authorized to sell short-term commercial paper notes to the extent availability exists under the Senior Credit Facility. PFSA uses the Senior Credit Facility as back-up liquidity to support 100% of commercial paper outstanding. PFSA had $117.8 million of commercial paper outstanding as of December 31, 2019 and $76.0 million as of December 31, 2018, all of which was classified as long-term debt as we have the intent and the ability to refinance such obligations on a long-term basis under the Senior Credit Facility.

Our debt agreements contain various financial covenants, but the most restrictive covenants are contained in the Senior Credit Facility. The Senior Credit Facility contains covenants requiring us not to permit (i) the ratio of our consolidated debt (net of its consolidated unrestricted cash in excess of $5.0 million but not to exceed $250.0 million) to our consolidated net income (excluding, among other things, non-cash gains and losses) before interest, taxes, depreciation, amortization and non-cash share-based compensation expense ("EBITDA") on the last day of any period of four consecutive fiscal quarters to exceed 3.75 to 1.00 (the "Leverage Ratio") and (ii) the ratio of our EBITDA to our consolidated interest expense, for the same period to be less than 3.00 to 1.00 as of the end of each fiscal quarter. For purposes of the Leverage Ratio, the Senior Credit Facility provides for the calculation of EBITDA giving pro forma effect to certain acquisitions, divestitures and liquidations during the period to which such calculation relates. As of December 31, 2019, we were in compliance with all financial covenants in our debt agreements.

In addition to the Senior Credit Facility, we have various other credit facilities with an aggregate availability of $21.0 million, of which there were no outstanding borrowings at December 31, 2019. Borrowings under these credit facilities bear interest at variable rates.

In June 2018, we used the $993.6 million of cash received from nVent as a result of the Distribution to pay down commercial paper and revolving credit facilities, redeem the remaining $255.3 million aggregate principal of our 2.9% fixed rate senior notes due 2018, and complete a cash tender offer in the amount of €363.4 million aggregate principal of our 2.45% senior notes due 2019. All costs associated with the repurchases of debt were recorded as a *Loss on early extinguishment of debt* in the Consolidated Statements of Operations and Comprehensive Income, including $16.0 million premium paid on early extinguishment and $1.1 million of unamortized deferred financing costs.

We have $74.0 million aggregate principal amount of fixed rate senior notes maturing in 2020. We classified this debt as long-term as of December 31, 2019 as we have the intent and ability to refinance such obligation on a long-term basis under the Senior Credit Facility.

As of December 31, 2019, we had $58.8 million of cash held in certain countries in which the ability to repatriate is limited due to local regulations or significant potential tax consequences.

We expect to continue to have cash requirements to support working capital needs and capital expenditures, to pay interest and service debt and to pay dividends to shareholders quarterly. We believe we have the ability and sufficient capacity to meet these cash requirements by using available cash and internally generated funds and to borrow under our committed and uncommitted credit facilities.

Authorized shares
Our authorized share capital consists of 426.0 million ordinary shares with a par value of $0.01 per share.

Share repurchases
In December 2014, the Board of Directors authorized the repurchase of our ordinary shares up to a maximum dollar limit of $1.0 billion (the "2014 Authorization"). On May 8, 2018, the Board of Directors authorized the repurchase of our ordinary shares up to a maximum dollar limit of $750.0 million (the "2018 Authorization"), replacing the 2014 Authorization. The 2018 Authorization expires on May 31, 2021.

During the year ended December 31, 2017, we repurchased 3.0 million of our ordinary shares for $200.0 million under the 2014 Authorization.

During the year ended December 31, 2018, we repurchased 10.2 million of our ordinary shares for $500.0 million, of which 2.2 million shares, or $150.0 million, and 8.0 million shares, or $350.0 million, were repurchased pursuant to the 2014 and 2018 Authorizations, respectively.

During the year ended December 31, 2019, we repurchased 4.0 million of our ordinary shares for $150.0 million pursuant to the 2018 Authorization.

As of December 31, 2019, we had $250.0 million available for share repurchases under the 2018 Authorization.

Dividends
On December 9, 2019, the Board of Directors approved a 6 percent increase in the company's regular quarterly dividend rate (from $0.18 per share to $0.19 per share) that was paid on February 7, 2020 to shareholders of record at the close of business on January 24, 2020. As a result, the balance of dividends payable included in *Other current liabilities* on our Consolidated Balance Sheets was $32.0 million at December 31, 2019. Dividends paid per ordinary share were $0.72, $1.05 and $1.38 for the years ended December 31, 2019, 2018 and 2017, respectively.

Under Irish law, the payment of future cash dividends and repurchases of shares may be paid only out of Pentair plc's "distributable reserves" on its statutory balance sheet. Pentair plc is not permitted to pay dividends out of share capital, which includes share premiums. Distributable reserves may be created through the earnings of the Irish parent company and through a reduction in share capital approved by the Irish High Court. Distributable reserves are not linked to a GAAP reported amount (e.g., retained earnings). Our distributable reserve balance was $6.6 billion and $6.5 billion as of December 31, 2019 and 2018, respectively.

Contractual obligations
The following summarizes our significant contractual obligations that impact our liquidity:

	Years ended December 31						
In millions	**2020**	**2021**	**2022**	**2023**	**2024**	**Thereafter**	**Total**
Debt obligations	$ 74.0	$ 103.8	$ 88.3	$ 353.6	$ —	$ 419.3	$ 1,039.0
Interest obligations on fixed-rate debt	30.0	24.3	21.7	18.9	18.9	90.9	204.7
Operating lease obligations, net of sublease rentals	23.3	18.8	16.3	13.9	11.0	11.0	94.3
Purchase and marketing obligations	36.4	20.1	7.7	3.7	3.8	10.1	81.8
Pension and other post-retirement plan contributions	8.5	8.4	8.3	8.6	8.5	41.8	84.1
Total contractual obligations, net	$ 172.2	$ 175.4	$ 142.3	$ 398.7	$ 42.2	$ 573.1	$ 1,503.9

The majority of the purchase obligations represent commitments for raw materials to be utilized in the normal course of business. For purposes of the above table, arrangements are considered purchase obligations if a contract specifies all significant terms, including fixed or minimum quantities to be purchased, a pricing structure and approximate timing of the transaction.

In addition to the summary of significant contractual obligations, we will incur annual interest expense on outstanding variable rate debt. As of December 31, 2019, variable interest rate debt was $353.6 million at a weighted average interest rate of 2.71%.

The total gross liability for uncertain tax positions at December 31, 2019 was estimated to be $47.4 million. We record penalties and interest related to unrecognized tax benefits in *Provision for income taxes* and *Interest expense*, respectively, which is consistent with our past practices. As of December 31, 2019, we had recorded $0.4 million for the possible payment of penalties and $3.7 million related to the possible payment of interest.

Other financial measures

In addition to measuring our cash flow generation or usage based upon operating, investing and financing classifications included in the Consolidated Statements of Cash Flows, we also measure our free cash flow. We have a long-term goal to consistently generate free cash flow that equals or exceeds 100 percent conversion of net income. Free cash flow is a non-GAAP financial measure that we use to assess our cash flow performance. We believe free cash flow is an important measure of liquidity because it provides us and our investors a measurement of cash generated from operations that is available to pay dividends, make acquisitions, repay debt and repurchase shares. In addition, free cash flow is used as a criterion to measure and pay compensation-based incentives. Our measure of free cash flow may not be comparable to similarly titled measures reported by other companies.

The following table is a reconciliation of free cash flow:

	Years ended December 31		
In millions	**2019**	**2018**	**2017**
Net cash provided by operating activities of continuing operations	$ 345.2	$ 458.1	$ 278.6
Capital expenditures of continuing operations	(58.5)	(48.2)	(39.1)
Proceeds from sale of property and equipment of continuing operations	0.6	0.2	3.7
Free cash flow from continuing operations	$ 287.3	$ 410.1	$ 243.2
Net cash provided by (used for) operating activities of discontinued operations	7.8	(19.0)	341.6
Capital expenditures of discontinued operations	—	(7.4)	(38.6)
Proceeds from sale of property and equipment of discontinued operations	—	2.3	4.5
Free cash flow	$ 295.1	$ 386.0	$ 550.7

Off-balance sheet arrangements

At December 31, 2019, we had no off-balance sheet financing arrangements.

COMMITMENTS AND CONTINGENCIES

We have been, and in the future may be, made parties to a number of actions filed or have been, and in the future may be, given notice of potential claims relating to the conduct of our business, including those relating to commercial or contractual disputes with suppliers, customers or parties to acquisitions and divestitures, intellectual property matters, environmental, safety and health matters, product liability, the use or installation of our products, consumer matters, and employment and labor matters.

While we believe that a material impact on our consolidated financial position, results of operations or cash flows from any such future claims or potential claims is unlikely, given the inherent uncertainty of litigation, a remote possibility exists that a future adverse ruling or unfavorable development could result in future charges that could have a material impact. We do and will continue to periodically reexamine our estimates of probable liabilities and any associated expenses and receivables and make appropriate adjustments to such estimates based on experience and developments in litigation. As a result, the current estimates of the potential impact on our consolidated financial position, results of operations and cash flows for the proceedings and claims described in ITEM 8, Note 15 of the Notes to Consolidated Financial Statements could change in the future.

Product liability claims

We are subject to various product liability lawsuits and personal injury claims. A substantial number of these lawsuits and claims are insured and accrued for by Penwald, our captive insurance subsidiary. See discussion in ITEM 1 and ITEM 8, Note 1 of the Notes to Consolidated Financial Statements — Insurance subsidiary. Penwald records a liability for these claims based on actuarial projections of ultimate losses. For all other claims, accruals covering the claims are recorded, on an undiscounted basis, when it is probable that a liability has been incurred and the amount of the liability can be reasonably estimated based on existing information. The accruals are adjusted periodically as additional information becomes available. We have not experienced significant unfavorable trends in either the severity or frequency of product liability lawsuits or personal injury claims.

Stand-by letters of credit, bank guarantees and bonds
In certain situations, Tyco International Ltd., Pentair Ltd.'s former parent company ("Tyco"), guaranteed performance by the flow control business of Pentair Ltd. ("Flow Control") to third parties or provided financial guarantees for financial commitments of Flow Control. In situations where Flow Control and Tyco were unable to obtain a release from these guarantees in connection with the spin-off of Flow Control from Tyco, we will indemnify Tyco for any losses it suffers as a result of such guarantees.

In the ordinary course of business, we are required to commit to bonds, letters of credit and bank guarantees that require payments to our customers for any non-performance. The outstanding face value of these instruments fluctuates with the value of our projects in process and in our backlog. In addition, we issue financial stand-by letters of credit primarily to secure our performance to third parties under self-insurance programs.

As of December 31, 2019 and 2018, the outstanding value of bonds, letters of credit and bank guarantees totaled $91.3 million and $123.6 million, respectively.

NEW ACCOUNTING STANDARDS

See ITEM 8, Note 1 of the Notes to Consolidated Financial Statements, included in this Form 10-K, for information pertaining to recently adopted accounting standards or accounting standards to be adopted in the future.

CRITICAL ACCOUNTING POLICIES

We have adopted various accounting policies to prepare the consolidated financial statements in accordance with GAAP. Our significant accounting policies are more fully described in ITEM 8, Note 1 of the Notes to Consolidated Financial Statements. Certain accounting policies require the application of significant judgment by management in selecting the appropriate assumptions for calculating financial estimates. By their nature, these judgments are subject to an inherent degree of uncertainty. These judgments are based on our historical experience, terms of existing contracts, our observance of trends in the industry and information available from other outside sources, as appropriate. We consider an accounting estimate to be critical if:

- it requires us to make assumptions about matters that were uncertain at the time we were making the estimate; and
- changes in the estimate or different estimates that we could have selected would have had a material impact on our financial condition or results of operations.

Our critical accounting estimates include the following:

Impairment of goodwill and indefinite-lived intangibles
Goodwill
Goodwill represents the excess of the cost of acquired businesses over the net of the fair value of identifiable tangible net assets and identifiable intangible assets purchased and liabilities assumed.

Goodwill is tested at least annually for impairment and is tested for impairment more frequently if events or changes in circumstances indicate that the asset might be impaired. A qualitative assessment is first performed, as of the first day of the fourth quarter, to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying value. If it is concluded that this is the case, an evaluation, based upon discounted cash flows, is performed and requires management to estimate future cash flows, growth rates and economic and market conditions.

As a result of the qualitative assessment performed as of October 1, 2019 and 2018, it was determined that it was more likely than not that the fair value of the reporting units exceeded their respective carrying values. Factors considered in the analysis included the last discounted cash flow fair value assessment of reporting units performed in 2017 and the calculated excess fair value over carrying amount, financial performance, forecasts and trends, market capitalization, regulatory and environmental issues, macro-economic conditions, industry and market considerations, raw material costs and management stability. We also consider the extent to which each of the adverse events and circumstances identified affect the comparison of the respective reporting unit's fair value with its carrying amount. We place more weight on the events and circumstances that most affect the respective reporting unit's fair value or the carrying amount of its net assets. We consider positive and mitigating events and circumstances that may affect its determination of whether it is more likely than not that the fair value exceeds the carrying amount.

Identifiable intangible assets
Our primary identifiable intangible assets include: customer relationships, trade names, proprietary technology and patents. Identifiable intangibles with finite lives are amortized and those identifiable intangibles with indefinite lives are not amortized. Identifiable intangible assets that are subject to amortization are evaluated for impairment whenever events or changes in circumstances indicate that the carrying amount may not be recoverable. Identifiable intangible assets not subject to amortization are tested for impairment annually or more frequently if events warrant. We complete our annual impairment test the first day of the fourth quarter each year for those identifiable assets not subject to amortization.

The impairment test for trade names consists of a comparison of the fair value of the trade name with its carrying value. Fair value is measured using the relief-from-royalty method. This method assumes the trade name has value to the extent that the owner is relieved of the obligation to pay royalties for the benefits received from them. This method requires us to estimate the future revenue for the related brands, the appropriate royalty rate and the weighted average cost of capital. The non-recurring fair value measurement is a “Level 3” measurement under the fair value hierarchy.

There were no impairment charges recorded in 2019 or 2018 for identifiable intangible assets. An impairment charge of $8.8 million was recorded in 2017 related to certain trade names in Filtration Solutions and Flow Technologies as a result of lower forecasted sales volume or rebranding strategies implemented in the fourth quarter of 2017. The trade name impairment charges were recorded in *Selling, general and administrative* in our Consolidated Statements of Operations and Comprehensive

Pension and other post-retirement plans
We sponsor U.S. and non-U.S. defined-benefit pension and other post-retirement plans. The amounts recognized in our consolidated financial statements related to our defined-benefit pension and other post-retirement plans are determined from actuarial valuations. Inherent in these valuations are assumptions, including: expected return on plan assets, discount rates, rate of increase in future compensation levels and health care cost trend rates. These assumptions are updated annually and are disclosed in ITEM 8, Note 11 to the Notes to Consolidated Financial Statements. Differences in actual experience or changes in assumptions may affect our pension and other post-retirement obligations and future expense.

We recognize changes in the fair value of plan assets and net actuarial gains or losses for pension and other post-retirement benefits annually in the fourth quarter each year (“mark-to-market adjustment”) and, if applicable, in any quarter in which an interim remeasurement is triggered. Net actuarial gains and losses occur when the actual experience differs from any of the various assumptions used to value our pension and other post-retirement plans or when assumptions change as they may each year. The primary factors contributing to actuarial gains and losses each year are (1) changes in the discount rate used to value pension and other post-retirement benefit obligations as of the measurement date and (2) differences between the expected and the actual return on plan assets. This accounting method also results in the potential for volatile and difficult to forecast mark-to-market adjustments. Mark-to-market adjustments resulted in a pre-tax gain of $3.4 million in 2019, and a pre-tax loss of $3.6 million and $8.5 million in 2018 and 2017, respectively. The remaining components of pension expense, including service and interest costs and the expected return on plan assets, are recorded on a quarterly basis as ongoing pension expense.

Discount rates
The discount rate reflects the current rate at which the pension liabilities could be effectively settled at the end of the year based on our December 31 measurement date. The discount rate was determined by matching our expected benefit payments to payments from a stream of bonds rated AA or higher available in the marketplace, adjusted to eliminate the effects of call provisions. There are no known or anticipated changes in our discount rate assumptions that will impact our pension expense in 2020.

Expected rate of return
The expected rate of return is designed to be a long-term assumption that may be subject to considerable year-to-year variance from actual returns. In developing the expected long-term rate of return, we considered our historical returns, with consideration given to forecasted economic conditions, our asset allocations, input from external consultants and broader long-term market indices.

Loss contingencies
Accruals are recorded for various contingencies including legal proceedings, 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, we record receivables from third party insurers when recovery has been determined to be probable.

Income taxes
In determining taxable income for financial statement purposes, we must make certain estimates and judgments. These estimates and judgments affect the calculation of certain tax liabilities and the determination of the recoverability of certain of the deferred tax assets, which arise from temporary differences between the tax and financial statement recognition of revenue and expense. In evaluating our ability to recover our deferred tax assets we consider all available positive and negative evidence including our past

operating results, the existence of cumulative losses in the most recent years and our forecast of future taxable income. In estimating future taxable income, we develop assumptions including the amount of future pre-tax operating income, the reversal of temporary differences and the implementation of feasible and prudent tax planning strategies. These assumptions require significant judgment about the forecasts of future taxable income and are consistent with the plans and estimates we are using to manage the underlying businesses.

We currently have recorded valuation allowances that we will maintain until when, in the opinion of management, it is more likely than not that some portion or all of the deferred tax assets will be realized. Our income tax expense recorded in the future may be reduced to the extent of decreases in our valuation allowances. The realization of our remaining deferred tax assets is primarily dependent on future taxable income in the appropriate jurisdiction. Any reduction in future taxable income including but not limited to any future restructuring activities may require that we record an additional valuation allowance against our deferred tax assets. An increase in the valuation allowance could result in additional income tax expense in such period and could have a significant impact on our future earnings.

Changes in tax laws and rates could also affect recorded deferred tax assets and liabilities in the future. Management records the effect of a tax rate or law change on the Company's deferred tax assets and liabilities in the period of enactment. Future tax rate or law changes could have a material effect on the Company's financial condition, results of operations or cash flows.

In addition, the calculation of our tax liabilities involves dealing with uncertainties in the application of complex tax regulations in a multitude of jurisdictions across our global operations. We perform reviews of our income tax positions on a quarterly basis and accrue for uncertain tax positions. We recognize potential liabilities and record tax liabilities for anticipated tax audit issues in the tax jurisdictions in which we operate based on our estimate of whether, and the extent to which, additional taxes will be due. These tax liabilities are reflected net of related tax loss carryforwards. As events change or resolution occurs, these liabilities are adjusted, such as in the case of audit settlements with taxing authorities. The ultimate resolution may result in a payment that is materially different from our current estimate of the tax liabilities. If our estimate of tax liabilities proves to be less than the ultimate assessment, an additional charge to expense would result. If payment of these amounts ultimately proves to be less than the recorded amounts, the reversal of the liabilities would result in tax benefits being recognized in the period when we determine the liabilities are no longer necessary.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Market risk is the potential economic loss that may result from adverse changes in the fair value of financial instruments. We are exposed to various market risks, including changes in interest rates and foreign currency rates. Periodically, we use derivative financial instruments to manage or reduce the impact of changes in interest rates and foreign currency rates. Counterparties to all derivative contracts are major financial institutions. All instruments are entered into for other than trading purposes. The major accounting policies and utilization of these instruments is described more fully in ITEM 8, Note 1 of the Notes to Consolidated Financial Statements.

Interest rate risk

Our debt portfolio as of December 31, 2019, was comprised of debt predominantly denominated in U.S. dollars. This debt portfolio is comprised of 66% fixed-rate debt and 34% variable-rate debt. Changes in interest rates have different impacts on the fixed and variable-rate portions of our debt portfolio. A change in interest rates on the fixed portion of the debt portfolio impacts the fair value, but has no impact on interest incurred or cash flows. A change in interest rates on the variable portion of the debt portfolio impacts the interest incurred and cash flows but does not impact the net financial instrument position.

Based on the fixed-rate debt included in our debt portfolio, as of December 31, 2019, a 100 basis point increase or decrease in interest rates would result in a $39.8 million decrease or $43.4 million increase in fair value, respectively.

Based on the variable-rate debt included in our debt portfolio as of December 31, 2019, a 100 basis point increase or decrease in interest rates would result in a $3.5 million increase or decrease in interest incurred.

Foreign currency risk

We conduct business in various locations throughout the world and are subject to market risk due to changes in the value of foreign currencies in relation to our reporting currency, the U.S. dollar. Periodically, we use derivative financial instruments to manage these risks. The functional currencies of our foreign operating locations are generally the local currency in the country of domicile. We manage these operating activities at the local level and revenues, costs, assets and liabilities are generally denominated in local currencies, thereby mitigating the risk associated with changes in foreign exchange. However, our results of operations and assets and liabilities are reported in U.S. dollars and thus will fluctuate with changes in exchange rates between such local currencies and the U.S. dollar.

From time to time, we may enter into short duration foreign currency contracts to hedge foreign currency risks. As the majority of our foreign currency contracts have an original maturity date of less than one year, there is no material foreign currency risk. At December 31, 2019 and 2018, we had outstanding foreign currency derivative contracts with gross notional U.S. dollar equivalent amounts of $17.0 million and $47.6 million, respectively. Changes in the fair value of all derivatives are recognized immediately in income unless the derivative qualifies as a hedge of future cash flows. Gains and losses related to a hedge are deferred and recorded in the Consolidated Balance Sheets as a component of *Accumulated other comprehensive loss* and subsequently recognized in the Consolidated Statements of Operations and Comprehensive Income when the hedged item affects earnings.

At December 31, 2019, we had outstanding cross currency swap agreements with a combined notional amount of $777.0 million. The cross currency swap agreements are accounted for as either cash flow hedges to hedge foreign currency fluctuations on certain intercompany debt, or as net investment hedges to manage our exposure to fluctuations in the Euro-U.S. Dollar exchange rate. The currency risk related to the cross currency swap agreements is measured by estimating the potential impact of a 10% change in the value of the U.S. dollar relative to the Euro. A 10% appreciation of the U.S. dollar relative to the Euro would result in a $57.9 million net increase in *Accumulated other comprehensive loss*. Conversely, a 10% depreciation of the U.S. dollar relative to the Euro would result in a $55.2 million net decrease in *Accumulated other comprehensive loss*. However, these increases and decreases in Other comprehensive income would be offset by decreases or increases in the hedged items on our balance sheet.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

MANAGEMENT’S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING

Management of Pentair plc and its subsidiaries (the “Company”) is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Rules 13a-15(f) and 15d-15(f) of the Securities Exchange Act of 1934. The Company’s internal control over financial reporting is 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. The Company’s internal control over financial reporting includes those policies and procedures that (1) pertain to maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the Company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of the 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 (3) 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 the effectiveness of internal control over financial reporting to future periods are subject to the risk that the controls may become inadequate because of changes in conditions or that the degree of compliance with the policies or procedures may deteriorate.

Management assessed the effectiveness of the Company’s internal control over financial reporting as of December 31, 2019. In making this assessment, management used the criteria for effective internal control over financial reporting described in *Internal Control-Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on this assessment, management believes that, as of December 31, 2019, the Company’s internal control over financial reporting was effective based on those criteria.

Our independent registered public accounting firm, Deloitte & Touche LLP, has issued an attestation report on the Company’s internal control over financial reporting as of December 31, 2019. That attestation report is set forth immediately following this management report.

John L. Stauch
President and Chief Executive Officer

Mark C. Borin
Executive Vice President, Chief Financial Officer and Chief Accounting Officer

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the shareholders and the Board of Directors of Pentair plc

Opinion on Internal Control over Financial Reporting

We have audited the internal control over financial reporting of Pentair plc and subsidiaries (the "Company") as of December 31, 2019, 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 Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on the criteria established in *Internal Control—Integrated Framework (2013)* issued by COSO.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated financial statements as of and for the year ended December 31, 2019, of the Company and our report dated February 25, 2020 expressed an unqualified opinion on those financial statements.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the 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 audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

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 (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) 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 (3) 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.

/s/ Deloitte & Touche LLP

Minneapolis, Minnesota
February 25, 2020

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the shareholders and the Board of Directors of Pentair plc

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Pentair plc and subsidiaries (the "Company") as of December 31, 2019 and 2018, the related consolidated statements of operations and comprehensive income, cash flows, and changes in equity, for each of the three years in the period ended December 31, 2019, and the related notes (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2019 and 2018, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2019, in conformity with accounting principles generally accepted in the United States of America.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control —Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission and our report dated February 25, 2020 expressed an unqualified opinion on the Company's internal control over financial reporting.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the 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 audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the 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 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 financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current-period audit of the financial statements that were communicated or required to be communicated to the audit committee and that (1) relate to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Indefinite-lived Trade Names — Valuation — Refer to Notes 1 and 5 to the financial statements

Critical Audit Matter Description

The Company's evaluation of indefinite-lived trade names for impairment involves the comparison of the estimated fair value of each indefinite-lived trade name to its carrying value. The Company determines the estimated fair value of its trade names using the income approach, more specifically, the relief-from-royalty method. The determination of the estimated fair value using the relief-from-royalty method requires management to make significant estimates and assumptions including selecting appropriate royalty and discount rates and forecast future revenues. Changes in these assumptions could have a significant impact on the estimated fair value of indefinite-lived trade names. For certain of the Company's indefinite-lived trade names, a significant change in estimated fair value could cause a significant impairment.

The indefinite-lived trade names balance was $173.4 million as of December 31, 2019, of which certain trade names are higher risk for impairment. When identifying the higher risk indefinite-lived trade names, we considered the relationship of their fair value to carrying value. The estimated fair values of these trade names exceeded their carrying values as of the measurement date and, therefore, no impairment was recognized.

Given the level of judgment involved, management uses a third-party fair value specialist to assist in establishing the discount rate and royalty rate assumptions. As the trade name revenues are sensitive to changes in demand, auditing these assumptions involved a high degree of auditor judgment, and an increased extent of audit effort, including the need to involve our fair value specialists.

How the Critical Audit Matter Was Addressed in the Audit

Our audit procedures related to the significant estimates and assumptions for the trade names included the following, among others:

- We tested the effectiveness of controls over indefinite-lived trade names, including those over management's review of the revenue forecasts and the selection of the royalty and discount rates to be used in the valuation.
- We assessed management's ability to prepare accurate revenue forecasts by performing a retrospective review to compare actual results to management's historical forecasts.
- We evaluated the reasonableness of management's revenue forecasts by inquiring of management regarding the forecasts and comparing the forecasts to (1) historical results, (2) internal communications to management and the Board of Directors, and (3) forecasted information included in Company press releases, analyst and industry reports of the Company and companies in its peer group.
- We considered the impact of changes in the regulatory environment and the industry on management's forecasts.

With the assistance of our fair value specialists, we evaluated the royalty and discount rates used by management in the valuation, including testing the underlying source information and the mathematical calculations, developing a range of independent estimates and comparing those to the royalty and discount rates selected by management.

Income Taxes — Completeness of Uncertain Tax Positions — Refer to Notes 1 and 12 in the financial statements

Critical Audit Matter Description

The Company assesses uncertain tax positions ("UTP") based upon an evaluation of available information and records a liability when a position taken or expected to be taken in a tax return does not meet certain measurement or recognition criteria. A tax benefit is recognized only if management believes it is more likely than not that the tax position will be sustained upon examination by the relevant tax authority. Determining the completeness of UTPs is complex and significant judgment is involved in identifying which positions may not meet the required measurement or recognition criteria. As of December 31, 2019, the Company's recorded UTP balance was $47.4 million.

The UTP analysis is complex as it includes numerous tax jurisdictions and varying applications of tax laws. Given the multiple jurisdictions in which the Company operates and the complexity of tax law, auditing the completeness of UTPs involved a high degree of auditor judgment, and an increased extent of audit effort, including the need to involve our tax specialists.

How the Critical Audit Matter Was Addressed in the Audit

Our audit procedures to evaluate management's estimates, in material jurisdictions, related to the determination of UTPs included the following, among others:

- We tested the effectiveness of controls over management's determination of the existence of UTPs.
- With the assistance of our income tax specialists, we assessed the Company's determination of the existence of UTPs. In particular, our procedures included:
  - Evaluating the Company's significant judgments related to completeness of UTPs in material jurisdictions (U.S. and Switzerland):
    - We performed inquiries of management to assess whether they are aware of any new items or significant changes to the business that would impact the UTP assessment or give rise to new UTPs.
    - We evaluated the following: technical merits of existing UTPs, technical merits of potential UTPs, and significant transactions and their tax implications, including the completeness and accuracy of the underlying data supporting the transactions.
    - We assessed the appropriateness and consistency of management's methods and assumptions used in identifying uncertain tax positions
    - We evaluated former and ongoing tax audits by tax authorities.
    - We assessed the interpretation of applicable tax law.
    - We considered changes in applicable tax law.

- We inspected the Company's filed tax returns in material jurisdictions and the tax provision to obtain an understanding of significant differences. We assessed whether the appropriate UTP was recorded as well as whether any additional UTPs needed to be considered.
- We evaluated the appropriateness and consistency of the financial statement disclosures, including judgments associated with unrecognized tax benefits that could increase or decrease within 12 months of the reporting date.

/s/ Deloitte & Touche LLP

Minneapolis, Minnesota
February 25, 2020

We have served as the Company's auditor since 1977.

Pentair plc and Subsidiaries
Consolidated Statements of Operations and Comprehensive Income

	Years ended December 31		
In millions, except per-share data	**2019**	**2018**	**2017**
Net sales	$ 2,957.2	$ 2,965.1	$ 2,845.7
Cost of goods sold	1,905.7	1,917.4	1,858.2
Gross profit	1,051.5	1,047.7	987.5
Selling, general and administrative	540.1	534.3	536.0
Research and development	78.9	76.7	73.2
Operating income	432.5	436.7	378.3
Other (income) expense			
(Gain) loss on sale of businesses	(2.2)	7.3	4.2
Loss on early extinguishment of debt	—	17.1	101.4
Net interest expense	30.1	32.6	87.3
Other (income) expense	(2.9)	(0.1)	12.6
Income from continuing operations before income taxes	407.5	379.8	172.8
Provision for income taxes	45.8	58.1	58.7
Net income from continuing operations	361.7	321.7	114.1
(Loss) income from discontinued operations, net of tax	(6.0)	25.7	371.3
Gain from sale of discontinued operations, net of tax	—	—	181.1
Net income	$ 355.7	$ 347.4	$ 666.5
Comprehensive income, net of tax			
Net income	$ 355.7	$ 347.4	$ 666.5
Changes in cumulative translation adjustment (inclusive of divestiture of business reclassified to gain from sale of $374.2 for the year ended December 31, 2017)	(15.3)	10.0	497.5
Changes in market value of derivative financial instruments, net of tax	17.4	4.8	(4.6)
Comprehensive income	$ 357.8	$ 362.2	$ 1,159.4
Earnings per ordinary share			
Basic			
Continuing operations	$ 2.14	$ 1.83	$ 0.63
Discontinued operations	(0.04)	0.15	3.04
Basic earnings per ordinary share	$ 2.10	$ 1.98	$ 3.67
Diluted			
Continuing operations	$ 2.12	$ 1.81	$ 0.62
Discontinued operations	(0.03)	0.15	3.01
Diluted earnings per ordinary share	$ 2.09	$ 1.96	$ 3.63
Weighted average ordinary shares outstanding			
Basic	169.4	175.8	181.7
Diluted	170.4	177.3	183.7

See accompanying notes to consolidated financial statements.

Pentair plc and Subsidiaries
Consolidated Balance Sheets

In millions, except per-share data	December 31 2019	December 31 2018
Assets		
Current assets		
Cash and cash equivalents	$ 82.5	$ 74.3
Accounts receivable, net of allowances of $10.3 and $14.0, respectively	502.9	488.2
Inventories	377.4	387.5
Other current assets	99.1	89.4
Total current assets	1,061.9	1,039.4
Property, plant and equipment, net	283.2	272.6
Other assets		
Goodwill	2,258.3	2,072.7
Intangibles, net	339.2	276.3
Other non-current assets	196.9	145.5
Total other assets	2,794.4	2,494.5
Total assets	$ 4,139.5	$ 3,806.5
Liabilities and Equity		
Current liabilities		
Accounts payable	$ 325.1	$ 378.6
Employee compensation and benefits	71.0	111.7
Other current liabilities	352.9	328.4
Total current liabilities	749.0	818.7
Other liabilities		
Long-term debt	1,029.1	787.6
Pension and other post-retirement compensation and benefits	96.4	90.0
Deferred tax liabilities	104.4	105.9
Other non-current liabilities	206.7	168.2
Total liabilities	2,185.6	1,970.4
Equity		
Ordinary shares $0.01 par value, 426.0 authorized, 168.3 and 171.4 issued at December 31, 2019 and December 31, 2018, respectively	1.7	1.7
Additional paid-in capital	1,777.7	1,893.8
Retained earnings	401.0	169.2
Accumulated other comprehensive loss	(226.5)	(228.6)
Total equity	1,953.9	1,836.1
Total liabilities and equity	$ 4,139.5	$ 3,806.5

See accompanying notes to consolidated financial statements.

Pentair plc and Subsidiaries
Consolidated Statements of Cash Flows

In millions	Years ended December 31 2019	2018	2017
Operating activities			
Net income	$ 355.7	$ 347.4	$ 666.5
Loss (income) from discontinued operations, net of tax	6.0	(25.7)	(371.3)
Gain from sale of discontinued operations, net of tax	—	—	(181.1)
Adjustments to reconcile net income from continuing operations to net cash provided by operating activities of continuing operations			
Equity income of unconsolidated subsidiaries	(3.5)	(8.4)	(1.3)
Depreciation	48.3	49.7	50.8
Amortization	31.7	34.9	36.4
(Gain) loss on sale of businesses	(2.2)	7.3	4.2
Deferred income taxes	(18.4)	(4.1)	(18.0)
Share-based compensation	21.4	20.9	39.6
Trade name and other impairment	21.2	12.0	15.6
Loss on early extinguishment of debt	—	17.1	101.4
Pension and other post-retirement expense	1.9	13.2	24.9
Pension and other post-retirement contributions	(20.9)	(8.9)	(8.3)
Changes in assets and liabilities, net of effects of business acquisitions			
Accounts receivable	(17.5)	(15.3)	(13.4)
Inventories	13.6	(40.1)	(20.5)
Other current assets	(18.4)	31.2	(13.0)
Accounts payable	(63.6)	58.3	15.6
Employee compensation and benefits	(19.1)	(0.6)	(1.4)
Other current liabilities	(0.4)	(3.3)	(54.6)
Other non-current assets and liabilities	9.4	(27.5)	6.5
Net cash provided by operating activities of continuing operations	345.2	458.1	278.6
Net cash provided by (used for) operating activities of discontinued operations	7.8	(19.0)	341.6
Net cash provided by operating activities	353.0	439.1	620.2
Investing activities			
Capital expenditures	(58.5)	(48.2)	(39.1)
Proceeds from sale of property and equipment	0.6	0.2	3.7
Proceeds from (payments due to) sale of businesses	15.3	(12.8)	2,759.4
Acquisitions, net of cash acquired	(287.8)	(0.9)	(45.9)
Other	(1.5)	—	—
Net cash (used for) provided by investing activities of continuing operations	(331.9)	(61.7)	2,678.1
Net cash used for investing activities of discontinued operations	—	(7.1)	(47.7)
Net cash (used for) provided by investing activities	(331.9)	(68.8)	2,630.4
Financing activities			
Net receipts (repayments) of commercial paper and revolving long-term debt	51.5	39.7	(913.1)
Proceeds from long-term debt	600.0	—	—
Repayment of long-term debt	(401.5)	(675.1)	(2,009.3)
Premium paid on early extinguishment of debt	—	(16.0)	(94.9)
Distribution of cash from nVent, net of cash transferred	—	919.4	—
Shares issued to employees, net of shares withheld	12.5	13.3	37.2
Repurchases of ordinary shares	(150.0)	(500.0)	(200.0)
Dividends paid	(122.7)	(187.2)	(251.7)
Other	(6.9)	(2.0)	(0.8)
Net cash used for financing activities	(17.1)	(407.9)	(3,432.6)
Change in cash held for sale	—	27.0	(5.4)
Effect of exchange rate changes on cash and cash equivalents	4.2	(1.4)	56.8
Change in cash and cash equivalents	8.2	(12.0)	(130.6)
Cash and cash equivalents, beginning of year	74.3	86.3	216.9
Cash and cash equivalents, end of year	$ 82.5	$ 74.3	$ 86.3
Supplemental disclosure of cash flow information:			
Cash paid for interest, net	$ 33.7	$ 43.7	$ 107.2
Cash paid for income taxes, net	59.0	92.9	362.1

See accompanying notes to consolidated financial statements.

Pentair plc and Subsidiaries
Consolidated Statements of Changes in Equity

In millions	Ordinary shares Number	Ordinary shares Amount	Additional paid-in capital	Retained earnings	Accumulated other comprehensive income (loss)	Total
Balance - December 31, 2016	181.8	$ 1.8	$ 2,920.8	$ 2,068.1	$ (736.3)	$ 4,254.4
Net income	—	—	—	666.5	—	666.5
Other comprehensive income, net of tax	—	—	—	—	492.9	492.9
Dividends declared	—	—	—	(252.9)	—	(252.9)
Share repurchases	(3.0)	—	(200.0)	—	—	(200.0)
Exercise of options, net of shares tendered for payment	1.2	—	45.6	—	—	45.6
Issuance of restricted shares, net of cancellations	0.4	—	—	—	—	—
Shares surrendered by employees to pay taxes	(0.1)	—	(8.3)	—	—	(8.3)
Share-based compensation	—	—	39.6	—	—	39.6
Balance - December 31, 2017	180.3	$ 1.8	$ 2,797.7	$ 2,481.7	$ (243.4)	$ 5,037.8
Net income	—	—	—	347.4	—	347.4
Cumulative effect of accounting changes	—	—	—	(214.0)	—	(214.0)
Other comprehensive income, net of tax	—	—	—	—	62.6	62.6
Distribution to nVent	—	—	(438.2)	(2,291.0)	(47.8)	(2,777.0)
Dividends declared	—	—	—	(154.9)	—	(154.9)
Share repurchases	(10.2)	(0.1)	(499.9)	—	—	(500.0)
Exercise of options, net of shares tendered for payment	0.9	—	24.3	—	—	24.3
Issuance of restricted shares, net of cancellations	0.5	—	—	—	—	—
Shares surrendered by employees to pay taxes	(0.1)	—	(11.0)	—	—	(11.0)
Share-based compensation	—	—	20.9	—	—	20.9
Balance - December 31, 2018	171.4	$ 1.7	$ 1,893.8	$ 169.2	$ (228.6)	$ 1,836.1
Net income	—	—	—	355.7	—	355.7
Other comprehensive income, net of tax	—	—	—	—	2.1	2.1
Dividends declared	—	—	—	(123.9)	—	(123.9)
Share repurchases	(4.0)	—	(150.0)	—	—	(150.0)
Exercise of options, net of shares tendered for payment	0.7	—	17.1	—	—	17.1
Issuance of restricted shares, net of cancellations	0.3	—	—	—	—	—
Shares surrendered by employees to pay taxes	(0.1)	—	(4.6)	—	—	(4.6)
Share-based compensation	—	—	21.4	—	—	21.4
Balance - December 31, 2019	168.3	$ 1.7	$ 1,777.7	$ 401.0	$ (226.5)	$ 1,953.9

See accompanying notes to consolidated financial statements.

1. Basis of Presentation and Summary of Significant Accounting Policies

Business

Pentair plc and its consolidated subsidiaries ("we," "us," "our," "Pentair" or the "Company") is a pure play water company comprised of three reporting segments: Aquatic Systems, Filtration Solutions and Flow Technologies.

Electrical separation

On April 30, 2018, Pentair completed the separation of its Electrical business from the rest of Pentair (the "Separation") by means of a dividend in specie of the Electrical business, which was effected by the transfer of the Electrical business from Pentair to nVent Electric plc ("nVent") and the issuance by nVent of ordinary shares directly to Pentair shareholders (the "Distribution"). On May 1, 2018, following the Separation and Distribution, nVent became an independent publicly traded company, trading on the New York Stock Exchange under the symbol "NVT."

The Company did not retain any equity interest in nVent. nVent's historical financial results are reflected in the Company's consolidated financial statements as a discontinued operation. Refer to Note 2 for further discussion.

Basis of presentation

The accompanying consolidated financial statements include the accounts of Pentair and all subsidiaries, both the United States ("U.S.") and non-U.S., which we control. Intercompany accounts and transactions have been eliminated. Investments in companies of which we own 20% to 50% of the voting stock or have the ability to exercise significant influence over operating and financial policies of the investee are accounted for using the equity method of accounting and as a result, our share of the earnings or losses of such equity affiliates is included in the Consolidated Statements of Operations and Comprehensive Income.

The consolidated financial statements have been prepared in U.S. dollars ("USD") and in accordance with accounting principles generally accepted in the United States of America ("GAAP").

Fiscal year

Our fiscal year ends on December 31. We report our interim quarterly periods on a calendar quarter basis.

Use of estimates

The preparation of our consolidated financial statements in conformity with GAAP requires us to make estimates and assumptions that affect the amounts reported in these consolidated financial statements and accompanying notes, disclosures of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. These estimates include our accounting for valuation of goodwill and indefinite lived intangible assets, estimated losses on accounts receivable, estimated realizable value on excess and obsolete inventory, percentage of completion revenue recognition, assets acquired and liabilities assumed in acquisitions, estimated selling proceeds from assets held for sale, contingent liabilities, income taxes, pension and other post-retirement benefits and the impact of the new lease standard, discussed below. Actual results could differ from our estimates.

Revenue recognition

Revenue is recognized when control of the promised goods or services are transferred to our customers, in an amount that reflects the consideration we expect to be entitled to in exchange for transferring those goods or providing services. We account for a contract when it has approval and commitment from both parties, the rights of the parties are identified, payment terms are identified, the contract has commercial substance and collectability of consideration is probable.

When determining whether the customer has obtained control of the goods or services, we consider any future performance obligations. Generally, there is no post-shipment obligation on product sold other than warranty obligations in the normal and ordinary course of business. In the event significant post-shipment obligations were to exist, revenue recognition would be deferred until Pentair has substantially accomplished what it must do to be entitled to the benefits represented by the revenue.

Performance obligations

A performance obligation is a promise in a contract to transfer a distinct good or service to the customer, and is the unit of account for purposes of revenue recognition. A contract's transaction price is allocated to each distinct performance obligation and recognized as revenue when, or as, the performance obligation is satisfied. The majority of our contracts have a single performance obligation as the promise to transfer the individual goods or services is not separately identifiable from other promises in the contracts and, therefore, not distinct. For contracts with multiple performance obligations, standalone selling price is generally readily observable.

Our performance obligations are satisfied at a point in time or over time as work progresses. Revenue from goods and services transferred to customers at a point in time accounted for 92.0%, 92.5% and 92.4% of our revenue for the years ended December 31, 2019, 2018 and 2017, respectively. Revenue on these contracts is recognized when obligations under the terms of the contract with our customer are satisfied; generally this occurs with the transfer of control upon shipment.

Revenue from products and services transferred to customers over time accounted for 8.0%, 7.5% and 7.6% of our revenue for the years ended December 31, 2019, 2018 and 2017, respectively. For the majority of our revenue recognized over time, we use an input measure to determine progress towards completion. Under this method, sales and gross profit are recognized as work is performed generally based on the relationship between the actual costs incurred and the total estimated costs at completion ("the cost-to-cost method") or based on efforts for measuring progress towards completion in situations in which this approach is more representative of the progress on the contract than the cost-to-cost method. Contract costs include labor, material, overhead and, when appropriate, general and administrative expenses. Changes to the original estimates may be required during the life of the contract, and such estimates are reviewed on a regular basis. Sales and gross profit are adjusted using the cumulative catch-up method for revisions in estimated total contract costs. These reviews have not resulted in adjustments that were significant to our results of operations. For performance obligations related to long term contracts, when estimates of total costs to be incurred on a performance obligation exceed total estimates of revenue to be earned, a provision for the entire loss on the performance obligation is recognized in the period the loss is determined.

On December 31, 2019, we had $56.4 million of remaining performance obligations on contracts with an original expected duration of one year or more. We expect to recognize the majority of our remaining performance obligations on these contracts within the next 12 to 18 months.

Sales returns
The right of return may exist explicitly or implicitly with our customers. Our return policy allows for customer returns only upon our authorization. Goods returned must be products we continue to market and must be in salable condition. When the right of return exists, we adjust the transaction price for the estimated effect of returns. We estimate the expected returns based on historical sales levels, the timing and magnitude of historical sales return levels as a percent of sales, type of product, type of customer and a projection of this experience into the future.

Pricing and sales incentives
Our contracts may give customers the option to purchase additional goods or services priced at a discount. Options to acquire additional goods or services at a discount can come in many forms, such as customer programs and incentive offerings including pricing arrangements, promotions and other volume-based incentives.

We reduce the transaction price for certain customer programs and incentive offerings including pricing arrangements, promotions and other volume-based incentives that represent variable consideration. Sales incentives given to our customers are recorded using either the expected value method or most likely amount approach for estimating the amount of consideration to which Pentair shall be entitled. The expected value is the sum of probability-weighted amounts in a range of possible consideration amounts. An expected value is an appropriate estimate of the amount of variable consideration when there are a large number of contracts with similar characteristics. The most likely amount is the single most likely amount in a range of possible consideration amounts (that is, the single most likely outcome of the contract). The most likely amount is an appropriate estimate of the amount of variable consideration if the contract has limited possible outcomes (for example, an entity either achieves a performance bonus or does not).

Pricing is established at or prior to the time of sale with our customers, and we record sales at the agreed-upon net selling price. However, one of our businesses allows customers to apply for a refund of a percentage of the original purchase price if they can demonstrate sales to a qualifying end customer. We use the expected value method to estimate the anticipated refund to be paid based on historical experience and reduce sales for the probable cost of the discount. The cost of these refunds is recorded as a reduction of the transaction price.

Volume-based incentives involve rebates that are negotiated at or prior to the time of sale with the customer and are redeemable only if the customer achieves a specified cumulative level of sales or sales increase. Under these incentive programs, at the time of sale, we determine the most likely amount of the rebate to be paid based on forecasted sales levels. These forecasts are updated at least quarterly for each customer, and the transaction price is reduced for the anticipated cost of the rebate. If the forecasted sales for a customer change, the accrual for rebates is adjusted to reflect the new amount of rebates expected to be earned by the customer.

Shipping and handling costs
Amounts billed to customers for shipping and handling activities after the customer obtains control are treated as a promised service performance obligation and recorded in *Net sales* in the accompanying Consolidated Statements of Operations and Comprehensive Income. Shipping and handling costs incurred by Pentair for the delivery of goods to customers are considered a cost to fulfill the contract and are included in *Cost of goods sold* in the accompanying Consolidated Statements of Operations and Comprehensive Income.

Contract assets and liabilities
Contract assets consist of unbilled amounts resulting from sales under long-term contracts when the cost-to-cost method of revenue recognition is utilized and revenue recognized exceeds the amount billed to the customer, such as when the customer retains a small portion of the contract price until completion of the contract. We typically receive interim payments on sales under long-term contracts as work progresses, although for some contracts, we may be entitled to receive an advance payment. Contract liabilities consist of advanced payments, billings in excess of costs incurred and deferred revenue.

Contract assets are recorded within *Other current assets*, and contract liabilities are recorded within *Other current liabilities* in the Consolidated Balance Sheets.

Contract assets and liabilities consisted of the following:

	December 31			
In millions	**2019**	**2018**	**$ Change**	**% Change**
Contract assets	$ 41.0	$ 36.5	$ 4.5	12.3 %
Contract liabilities	32.6	32.8	(0.2)	(0.6)%
Net contract assets	$ 8.4	$ 3.7	$ 4.7	127.0 %

The $4.7 million increase in net contract assets from December 31, 2018 to December 31, 2019 was primarily the result of timing of milestone payments. Approximately 80% of our contract liabilities at December 31, 2018 were recognized in revenue during the twelve months ended December 31, 2019. There were no impairment losses recognized on our contract assets for the twelve months ended December 31, 2019 and December 31, 2018.

Practical expedients and exemptions
We generally expense incremental costs of obtaining a contract when incurred because the amortization period would be less than one year. These costs primarily relate to sales commissions and are recorded in *Selling, general and administrative expense* in the Consolidated Statements of Operations and Comprehensive Income.

We do not disclose the value of unsatisfied performance obligations for contracts with an original expected length of one year or less. Further, we do not adjust the promised amount of consideration for the effects of a significant financing component if we expect, at contract inception, that the period between when we transfer a promised good or service to a customer and when the customer pays for that good or service will be one year or less.

Revenue by category
We disaggregate our revenue from contracts with customers by segment, geographic location and vertical, as we believe these best depict how the nature, amount, timing and uncertainty of our revenue and cash flows are affected by economic factors. Refer to Note 14 for revenue disaggregated by segment.

Geographic net sales information for continuing operations, based on geographic destination of the sale, was as follows:

	Years ended December 31		
In millions	**2019**	**2018**	**2017**
U.S.	$ 1,866.7	$ 1,858.1	$ 1,752.7
Western Europe	401.6	402.7	381.9
Developing [(1)]	480.6	476.5	478.2
Other Developed [(2)]	208.3	227.8	232.9
Consolidated net sales [(3)]	$ 2,957.2	$ 2,965.1	$ 2,845.7

(1) Developing includes China, Eastern Europe, Latin America, the Middle East and Southeast Asia.
(2) Other Developed includes Australia, Canada and Japan.
(3) Net sales held in Ireland, for each of the years presented, were not material.

Vertical net sales information was as follows:

	Years ended December 31		
In millions	**2019**	**2018**	**2017**
Residential	$ 1,668.2	$ 1,665.9	$ 1,579.0
Commercial	627.3	630.7	604.4
Industrial	661.7	668.5	662.3
Consolidated net sales	$ 2,957.2	$ 2,965.1	$ 2,845.7

Research and development

We conduct research and development ("R&D") activities primarily in our own facilities, which mostly consist of development of new products, product applications and manufacturing processes. We expense R&D costs as incurred. R&D expenditures from continuing operations during 2019, 2018 and 2017 were $78.9 million, $76.7 million and $73.2 million, respectively.

Cash equivalents

We consider highly liquid investments with original maturities of three months or less at the date of acquisition to be cash equivalents.

Trade receivables and concentration of credit risk

We record an allowance for doubtful accounts, reducing our receivables balance to an amount we estimate is collectible from our customers. Estimates used in determining the allowance for doubtful accounts are based on current trends, aging of accounts receivable, periodic credit evaluations of our customers' financial condition, and historical collection experience. We generally do not require collateral.

The following table summarizes the activity in the allowance for doubtful accounts:

	Years ended December 31		
In millions	**2019**	**2018**	**2017**
Beginning balance	$ 14.0	$ 14.2	$ 12.8
Bad debt expense	1.4	1.1	2.3
Write-offs, net of recoveries	(4.1)	(0.9)	(2.2)
Other [(1)]	(1.0)	(0.4)	1.3
Ending balance	$ 10.3	$ 14.0	$ 14.2

(1) Other amounts are primarily the effects of changes in currency translations and the impact of allowance for credits.

Inventories

Inventories are stated at lower of cost or net realizable value with substantially all inventories recorded using the first-in, first-out ("FIFO") cost method.

Property, plant and equipment, net

Property, plant and equipment is stated at historical cost. We compute depreciation by the straight-line method based on the following estimated useful lives:

	Years
Land improvements	5 to 20
Buildings and leasehold improvements	5 to 50
Machinery and equipment	3 to 15

Significant improvements that add to productive capacity or extend the lives of properties are capitalized. Costs for repairs and maintenance are charged to expense as incurred. When property is retired or otherwise disposed of, the recorded cost of the assets and their related accumulated depreciation are removed from the Consolidated Balance Sheets and any related gains or losses are included in income.

The following table presents geographic *Property, plant and equipment, net* by region as of December 31:

In millions	**2019**	**2018**
U.S.	$ 172.3	$ 156.9
Western Europe	69.7	76.6
Developing [(1)]	31.1	28.8
Other Developed [(2)]	10.1	10.3
Consolidated [(3)]	$ 283.2	$ 272.6

(1) Developing includes China, Eastern Europe, Latin America, the Middle East and Southeast Asia.

(2) Other Developed includes Australia, Canada and Japan.

(3) Property, plant and equipment, net held in Ireland, for each of the years presented, were not material.

We review the recoverability of long-lived assets to be held and used, such as property, plant and equipment, when events or changes in circumstances occur that indicate the carrying value of the asset or asset group may not be recoverable. The assessment of possible impairment is based on our ability to recover the carrying value of the asset or asset group from the expected future pre-tax cash flows (undiscounted and without interest charges) of the related operations. If these cash flows are less than the carrying value of such asset or asset group, an impairment loss is recognized for the difference between estimated fair value and carrying value. Impairment losses on long-lived assets held for sale are determined in a similar manner, except that fair values are reduced for the cost to dispose of the assets. The measurement of impairment requires us to estimate future cash flows and the fair value of long-lived assets. We recorded no material long-lived asset impairment charges in 2019, 2018, or 2017.

Goodwill and identifiable intangible assets

Goodwill

Goodwill represents the excess of the cost of acquired businesses over the net of the fair value of identifiable tangible net assets and identifiable intangible assets purchased and liabilities assumed.

Goodwill is tested at least annually for impairment and is tested for impairment more frequently if events or changes in circumstances indicate that the asset might be impaired. A qualitative assessment is first performed, as of the first day of the fourth quarter, to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying value. If it is concluded that this is the case, an evaluation, based upon discounted cash flows, is performed and requires management to estimate future cash flows, growth rates and economic and market conditions.

As a result of the qualitative assessment performed as of October 1, 2019 and 2018, it was determined that it was more likely than not that the fair value of the reporting units exceeded their respective carrying values. Factors considered in the analysis included the last discounted cash flow fair value assessment of reporting units performed in 2017 and the calculated excess fair value over carrying amount, financial performance, forecasts and trends, market capitalization, regulatory and environmental issues, macro-economic conditions, industry and market considerations, raw material costs and management stability. We also consider the extent to which each of the adverse events and circumstances identified affect the comparison of the respective reporting unit's fair value with its carrying amount. We place more weight on the events and circumstances that most affect the respective reporting unit's fair value or the carrying amount of its net assets. We consider positive and mitigating events and circumstances that may affect its determination of whether it is more likely than not that the fair value exceeds the carrying amount. This non-recurring fair value measurement is a "Level 3" measurement under the fair value hierarchy described in Note 9.

Identifiable intangible assets

Our primary identifiable intangible assets include: customer relationships, trade names, proprietary technology and patents. Identifiable intangibles with finite lives are amortized and those identifiable intangibles with indefinite lives are not amortized. Identifiable intangible assets that are subject to amortization are evaluated for impairment whenever events or changes in circumstances indicate that the carrying amount may not be recoverable. Identifiable intangible assets not subject to amortization are tested for impairment annually or more frequently if events warrant. We complete our annual impairment test during the first day of the fourth quarter each year for those identifiable assets not subject to amortization.

The impairment test for trade names consists of a comparison of the fair value of the trade name with its carrying value. Fair value is measured using the relief-from-royalty method. This method assumes the trade name has value to the extent that the owner is relieved of the obligation to pay royalties for the benefits received from them. This method requires us to estimate the future revenue for the related brands, the appropriate royalty rate and the weighted average cost of capital. The non-recurring fair value measurement is a "Level 3" measurement under the fair value hierarchy described in Note 9.

There were no impairment charges recorded in 2019 and 2018 for identifiable intangible assets. An impairment charge of $8.8 million was recorded in 2017 related to certain trade names in Filtration Solutions and Flow Technologies as a result of lower forecasted sales volume or rebranding strategies implemented in the fourth quarter of 2017. The trade name impairment charges were recorded in *Selling, general and administrative* in our Consolidated Statements of Operations and Comprehensive Income.

Income taxes

We use the asset and liability approach to account for income taxes. Under this method, deferred tax assets and liabilities are recognized for the expected future tax consequences of differences between the carrying amounts of assets and liabilities and their respective tax bases using enacted tax rates in effect for the year in which the differences are expected to reverse. The effect on deferred tax assets and liabilities of a change in tax rates is recognized in income in the period when the change is enacted. We maintain valuation allowances unless it is more likely than not that all or a portion of the deferred tax assets will be realized. Changes in valuation allowances from period to period are included in our tax provision in the period of change. We recognize the effect of income tax positions only if those positions are more likely than not of being sustained. Recognized income tax positions are measured at the largest amount that is greater than 50% likely of being realized. Changes in recognition or measurement are reflected in the period in which the change in judgment occurs.

Pension and other post-retirement plans

We sponsor U.S. and non-U.S. defined-benefit pension and other post-retirement plans. The pension and other post-retirement benefit costs for company-sponsored benefit plans are determined from actuarial assumptions and methodologies, including discount rates and expected returns on plan assets. These assumptions are updated annually and are disclosed in Note 11.

We recognize changes in the fair value of plan assets and net actuarial gains or losses for pension and other post-retirement benefits annually in the fourth quarter each year (“mark-to-market adjustment”) and, if applicable, in any quarter in which an interim remeasurement is triggered. Net actuarial gains and losses occur when the actual experience differs from any of the various assumptions used to value our pension and other post-retirement plans or when assumptions change, as they may each year. The remaining components of pension expense, including service and interest costs and estimated return on plan assets, are recorded on a quarterly basis.

Insurance subsidiary

A portion of our property and casualty insurance program is insured through our regulated wholly-owned captive insurance subsidiary, Penwald Insurance Company (“Penwald”). Reserves for policy claims are established based on actuarial projections of ultimate losses. As of December 31, 2019 and 2018, reserves for policy claims were $54.7 million, of which $13.1 million was included in *Other current liabilities* and $41.6 million was included in *Other non-current liabilities*, and $60.9 million, of which $13.2 million was included in *Other current liabilities* and $47.7 million was included in *Other non-current liabilities*, respectively.

Share-based compensation

We account for share-based compensation awards on a fair value basis. The estimated grant date fair value of each option award is recognized in income on an accelerated basis over the requisite service period (generally the vesting period). The estimated fair value of each option award is calculated using the Black-Scholes option-pricing model. From time to time, we have elected to modify the terms of the original grant. These modified grants are accounted for as a new award and measured using the fair value method, resulting in the inclusion of additional compensation expense in our Consolidated Statements of Operations and Comprehensive Income.

Restricted share awards and units (“RSUs”) are recorded as compensation cost over the requisite service periods based on the market value on the date of grant.

Performance share units (“PSUs”) are stock awards where the ultimate number of shares issued will be contingent on the Company’s performance against certain financial performance targets. The fair value of each PSU is based on the market value on the date of grant. We recognize expense related to the estimated vesting of our PSUs granted. The estimated vesting of the PSUs is based on the probability of achieving certain financial performance thresholds over the specified performance period.

Earnings per ordinary share

We present two calculations of earnings per ordinary share (“EPS”). Basic EPS equals net income divided by the weighted-average number of ordinary shares outstanding during the period. Diluted EPS is computed by dividing net income by the sum of weighted-average number of ordinary shares outstanding plus dilutive effects of ordinary share equivalents.

Derivative financial instruments
We recognize all derivatives, including those embedded in other contracts, as either assets or liabilities at fair value in our Consolidated Balance Sheets. If the derivative is designated and is effective as a cash-flow hedge, the effective portion of changes in the fair value of the derivative are recorded in *Accumulated other comprehensive income (loss)* ("AOCI") as a separate component of equity in the Consolidated Balance Sheets and are recognized in the Consolidated Statements of Operations and Comprehensive Income when the hedged item affects earnings. If the underlying hedged transaction ceases to exist or if the hedge becomes ineffective, all changes in fair value of the related derivatives that have not been settled are recognized in current earnings. For a derivative that is not designated as or does not qualify as a hedge, changes in fair value are reported in earnings immediately.

Gains and losses on net investment hedges are included in AOCI as a separate component of equity in the Consolidated Balance Sheets.

We use derivative instruments for the purpose of hedging interest rate and currency exposures, which exist as part of ongoing business operations. We do not hold or issue derivative financial instruments for trading or speculative purposes. Our policy is not to enter into contracts with terms that cannot be designated as normal purchases or sales. From time to time, we may enter into short duration foreign currency contracts to hedge foreign currency risks.

Foreign currency translation
The financial statements of subsidiaries located outside of the U.S. are generally measured using the local currency as the functional currency, except for certain corporate entities outside of the U.S. which are measured using USD. Assets and liabilities of these subsidiaries are translated at the rates of exchange at the balance sheet date. Income (Loss) and expense items are translated at average monthly rates of exchange. The resultant translation adjustments are included in AOCI, a component of equity.

New accounting standards
On January 1, 2019, we adopted ASU No. 2016-02, "Leases" ("the new lease standard" or "ASC 842") using the transition method of adoption. Under the transition method of adoption, comparative information has not been restated and continues to be reported under the standards in effect for those periods. In addition, we elected the package of practical expedients permitted under the transition guidance within the new standard, which among other things, allowed us to carry forward the historical lease classification. We also elected the practical expedient to not separate non-lease components from the lease components to which they relate, and instead account for each separate lease and non-lease component associated with that lease component as a single lease component for all underlying asset classes. Accordingly, all costs associated with a lease contract are accounted for as one lease cost.

The impact of adopting the new standard primarily relates to the recognition of a lease right-of-use ("ROU") asset and current and non-current lease liability on the consolidated balance sheet. ROU assets represent our right to use an underlying asset for the lease term and lease liabilities represent our obligation to make lease payments arising from the lease. Lease ROU assets and liabilities are recognized at commencement date based on the present value of lease payments over the lease term. As we cannot readily determine the rate implicit in the lease, we use our incremental borrowing rate determined by country of lease origin based on the anticipated lease term as determined at commencement date in determining the present value of lease payments. The ROU asset also excludes any accrued lease payments and unamortized lease incentives.

As of December 31, 2019, $77.2 million was included in *Other non-current assets*, $19.0 million in *Other current liabilities* and $61.1 million in *Other non-current liabilities*, on the Consolidated Balance Sheets as a result of the new lease standard. There was no impact on our Consolidated Statements of Operations and Comprehensive Income or Consolidated Statements of Cash Flows.

On January 1, 2019, we adopted ASU No. 2018-14, "Compensation - Retirement Benefits - Defined Benefit Plans - Changes to the Disclosure Requirements for Defined Benefit Plans." This ASU changes the disclosure requirements for employers that sponsor defined benefit pension and other postretirement benefit plans.

On January 1, 2018, we adopted ASU No. 2017-01, "Clarifying the Definition of a Business." This ASU clarifies the definition of a business and provides guidance on whether transactions should be accounted for as acquisitions (or disposals) of assets or businesses. The adoption of the new standard did not have a material impact on our consolidated financial statements.

On January 1, 2018, we adopted ASU No. 2017-07, "Retirement Benefits-Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost." As a result of the adoption, the interest cost, expected return on plan assets and net actuarial gain/loss components of net periodic pension and post-retirement benefit cost have been reclassified from *Selling, general and administrative expense* to *Other (income) expense*. Only the service cost component remains in *Operating income* and is eligible for capitalization in assets. The effect of the retrospective presentation change related to the net periodic cost of our defined benefit pension and other post-retirement plans on our Consolidated Statements of Operations and Comprehensive Income was a reclassification of expense of $13.9 million for the year ended December 31, 2017, from *Selling, general and administrative expense* to *Other (income) expense*.

On January 1, 2018, we adopted ASU No. 2016-16, "Accounting for Income Taxes: Intra-Entity Asset Transfers of Assets Other than Inventory." This ASU requires the tax effects of all intra-entity sales of assets other than inventory to be recognized in the period in which the transaction occurs. The adoption resulted in a $215.8 million cumulative-effect adjustment (of which $174.6 million related to nVent) recorded in retained earnings as of the beginning of 2018. The adjustment reflects a $254.3 million reduction of a prepaid long term tax asset, partially offset by the establishment of $38.5 million of deferred tax assets.

On January 1, 2018, we adopted ASU No. 2014-09, "Revenue from Contracts with Customers" and the related amendments ("the new revenue standard") using the modified retrospective method. The cumulative impact to our retained earnings at January 1, 2018 was not material. The comparative information has not been restated and continues to be reported under the accounting standards in effect for those periods. The impact of the adoption of the new standard did not have a material impact to our net income.

2. Acquisitions and Discontinued Operations

Acquisitions

In February 2019, as part of Filtration Solutions, we completed the acquisitions of Aquion, Inc. ("Aquion") and Pelican Water Systems ("Pelican") for $163.4 million and $121.1 million, respectively, in cash, net of cash acquired.

For Aquion, the excess of purchase price over tangible net assets and identified intangible assets acquired has been preliminarily allocated to goodwill in the amount of $87.5 million, $4.6 million of which is expected to be deductible for income tax purposes. Identifiable intangible assets acquired as part of the Aquion acquisition include $15.7 million of indefinite-lived trade name intangible assets and $78.8 million of definite-lived customer relationships with an estimated useful life of 15 years.

For Pelican, the excess purchase price over tangible net assets acquired has been preliminarily allocated to goodwill in the amount of $118.0 million, $7.6 million of which is expected to be deductible for income tax purposes.

The preliminary purchase price allocation for these acquisitions is subject to further refinement and may require significant adjustments to arrive at the final purchase price allocation. These changes will primarily relate to impacts associated with other accruals.

During 2017, our continuing operations completed acquisitions with purchase prices totaling $45.9 million in cash, net of cash acquired. Identifiable intangible assets acquired included $19.1 million of definite-lived customer relationships with an estimated useful life of 11 years.

The pro forma impact of these acquisitions was not material.

Discontinued Operations

Electrical separation

On April 30, 2018, we completed the Separation and Distribution. The results of the Electrical business have been presented as discontinued operations for all periods presented. The Electrical business had been previously disclosed as a stand-alone reporting segment. Separation costs related to the Separation and Distribution were $84.2 million and $39.3 million for the twelve months ended December 31, 2018 and 2017, respectively. These costs are reported in discontinued operations as they represent a cost directly related to the Separation and Distribution and were included within *(Loss) income from discontinued operations, net of tax* presented below.

Sale of Valves & Controls
On April 28, 2017, we completed the sale of the Valves & Controls business to Emerson Electric Co. for $3.15 billion in cash. The sale resulted in a gain of $181.1 million, net of tax. The results of the Valves & Controls business have been presented as discontinued operations. The Valves & Controls business was previously disclosed as a stand-alone reporting segment. Transaction costs of $56.4 million related to the sale of Valves & Controls were incurred during the year ended December 31, 2017 and were recorded within *Gain from sale of discontinued operations before income taxes* presented below.

Operating results of discontinued operations are summarized below:

	Years ended December 31		
In millions	2019	2018	2017
Net sales	$ —	$ 693.9	$ 2,548.2
Cost of goods sold	—	424.0	1,596.2
Gross profit	—	269.9	952.0
Selling, general and administrative	7.4	237.8	589.2
Research and development	—	14.6	48.3
Operating (loss) income	$ (7.4)	$ 17.5	$ 314.5
(Loss) income from discontinued operations before income taxes	$ (7.6)	$ 31.8	$ 317.1
Income tax (benefit) provision	(1.6)	6.1	(54.2)
(Loss) income from discontinued operations, net of tax	$ (6.0)	$ 25.7	$ 371.3
Gain from sale of discontinued operations before income taxes	$ —	$ —	$ 183.5
Provision for income taxes	—	—	2.4
Gain from sale of discontinued operations, net of tax	$ —	$ —	$ 181.1

3. Earnings Per Share

Basic and diluted earnings per share were calculated as follows:

	Years ended December 31		
In millions, except per share data	2019	2018	2017
Net income	$ 355.7	$ 347.4	$ 666.5
Net income from continuing operations	$ 361.7	$ 321.7	$ 114.1
Weighted average ordinary shares outstanding			
Basic	169.4	175.8	181.7
Dilutive impact of stock options and restricted stock awards	1.0	1.5	2.0
Diluted	170.4	177.3	183.7
Earnings per ordinary share			
Basic			
Continuing operations	$ 2.14	$ 1.83	$ 0.63
Discontinued operations	(0.04)	0.15	3.04
Basic earnings per ordinary share	$ 2.10	$ 1.98	$ 3.67
Diluted			
Continuing operations	$ 2.12	$ 1.81	$ 0.62
Discontinued operations	(0.03)	0.15	3.01
Diluted earnings per ordinary share	$ 2.09	$ 1.96	$ 3.63
Anti-dilutive stock options excluded from the calculation of diluted earnings per share	2.1	1.2	1.8

4. Restructuring

During 2019, 2018 and 2017, we initiated and continued execution of certain business restructuring initiatives aimed at reducing our fixed cost structure and realigning our business. Initiatives during the years ended December 31, 2019, 2018 and 2017 included a reduction in hourly and salaried headcount of approximately 375 employees, 300 employees and 250 employees, respectively.

Restructuring related costs included in *Selling, general and administrative* expenses in the Consolidated Statements of Operations and Comprehensive Income included costs for severance and other restructuring costs as follows:

	Years ended December 31		
In millions	**2019**	**2018**	**2017**
Severance and related costs	$ 11.7	$ 13.2	$ 27.3
Other	2.3	27.4	0.9
Total restructuring costs	$ 14.0	$ 40.6	$ 28.2

Other restructuring costs primarily consist of asset impairment and various contract termination costs.

Restructuring costs by reportable segment were as follows:

	Years ended December 31		
In millions	**2019**	**2018**	**2017**
Aquatic Systems	$ 4.2	$ 15.3	$ 3.6
Filtration Solutions	4.7	14.6	13.0
Flow Technologies	2.7	9.3	7.0
Other	2.4	1.4	4.6
Consolidated	$ 14.0	$ 40.6	$ 28.2

Activity related to accrued severance and related costs recorded in *Other current liabilities* in the Consolidated Balance Sheets is summarized as follows:

	Years ended December 31	
In millions	**2019**	**2018**
Beginning balance	$ 27.1	$ 34.5
Costs incurred	11.7	13.2
Cash payments and other	(22.6)	(20.6)
Ending balance	$ 16.2	$ 27.1

5. Goodwill and Other Identifiable Intangible Assets

The changes in the carrying amount of goodwill for the years ended December 31, 2019 and 2018 by reportable segment were as follows:

In millions	**December 31, 2018**	**Acquisitions/ divestitures**	**Foreign currency translation/other**	**December 31, 2019**
Aquatic Systems	$ 965.9	$ (3.7)	$ (0.8)	$ 961.4
Filtration Solutions	643.5	205.5	(11.8)	837.2
Flow Technologies	463.3	—	(3.6)	459.7
Total goodwill	$ 2,072.7	$ 201.8	$ (16.2)	$ 2,258.3

In millions	December 31, 2017	Foreign currency translation/other	December 31, 2018
Aquatic Systems	$ 973.1	$ (7.2)	$ 965.9
Filtration Solutions	667.6	(24.1)	643.5
Flow Technologies	472.1	(8.8)	463.3
Total goodwill	$ 2,112.8	$ (40.1)	$ 2,072.7

There has been no impairment of goodwill for any of the years presented.

Identifiable intangible assets consisted of the following at December 31:

	2019			2018		
In millions	Cost	Accumulated amortization	Net	Cost	Accumulated amortization	Net
Definite-life intangibles						
Customer relationships	$ 418.1	$ (269.1)	$ 149.0	$ 347.1	$ (247.9)	$ 99.2
Trade names	—	—	—	0.4	(0.4)	—
Proprietary technology and patents	42.3	(25.5)	16.8	86.2	(68.4)	17.8
Total finite-life intangibles	460.4	(294.6)	165.8	433.7	(316.7)	117.0
Indefinite-life intangibles						
Trade names	173.4	—	173.4	159.3	—	159.3
Total intangibles	$ 633.8	$ (294.6)	$ 339.2	$ 593.0	$ (316.7)	$ 276.3

Identifiable intangible asset amortization expense in 2019, 2018 and 2017 was $31.7 million, $34.9 million and $36.4 million, respectively.

There was no impairment charge for trade name intangible assets in 2019 and 2018. In 2017, we recorded an impairment charge for trade name intangible assets of $8.8 million in Filtration Solutions and Flow Technologies.

Estimated future amortization expense for identifiable intangible assets during the next five years is as follows:

In millions	2020	2021	2022	2023	2024
Estimated amortization expense	$ 28.3	$ 23.3	$ 16.3	$ 13.9	$ 12.6

6. Supplemental Balance Sheet Information

	December 31	
In millions	**2019**	**2018**
Inventories		
Raw materials and supplies	$ 196.2	$ 191.3
Work-in-process	65.2	64.0
Finished goods	116.0	132.2
Total inventories	$ 377.4	$ 387.5
Other current assets		
Cost in excess of billings	$ 41.0	$ 36.5
Prepaid expenses	48.3	36.7
Prepaid income taxes	5.2	8.5
Other current assets	4.6	7.7
Total other current assets	$ 99.1	$ 89.4
Property, plant and equipment, net		
Land and land improvements	$ 33.7	$ 33.5
Buildings and leasehold improvements	188.1	178.9
Machinery and equipment	610.7	593.8
Construction in progress	48.1	35.7
Total property, plant and equipment	880.6	841.9
Accumulated depreciation and amortization	597.4	569.3
Total property, plant and equipment, net	$ 283.2	$ 272.6
Other non-current assets		
Right-of-use lease assets	$ 77.2	$ —
Deferred income taxes	29.6	26.2
Deferred compensation plan assets	21.3	20.9
Other non-current assets	68.8	98.4
Total other non-current assets	$ 196.9	$ 145.5
Other current liabilities		
Dividends payable	$ 32.0	$ 30.8
Accrued warranty	32.1	33.9
Accrued rebates and incentives	83.5	76.9
Billings in excess of cost	22.5	21.3
Current lease liability	19.0	—
Income taxes payable	11.1	10.4
Accrued restructuring	16.2	27.1
Other current liabilities	136.5	128.0
Total other current liabilities	$ 352.9	$ 328.4
Other non-current liabilities		
Long-term lease liability	$ 61.1	$ —
Income taxes payable	45.4	46.8
Self-insurance liabilities	41.6	47.7
Deferred compensation plan liabilities	21.3	20.9
Foreign currency contract liabilities	11.6	30.6
Other non-current liabilities	25.7	22.2
Total other non-current liabilities	$ 206.7	$ 168.2

7. Accumulated Other Comprehensive Loss

Components of *Accumulated Other Comprehensive Loss* consist of the following:

	December 31	
In millions	**2019**	**2018**
Cumulative translation adjustments	$ (226.1)	$ (210.8)
Market value of derivative financial instruments, net of tax	(0.4)	(17.8)
Accumulated other comprehensive loss	$ (226.5)	$ (228.6)

8. Debt

Debt and the average interest rates on debt outstanding were as follows:

In millions	Average interest rate at December 31, 2019	Maturity year	December 31 2019	December 31 2018
Commercial paper	2.327%	2023	$ 117.8	$ 76.0
Revolving credit facilities	2.863%	2023	35.8	26.2
Term loans [(1)]	2.914%	2023	200.0	—
Senior notes - fixed rate [(1)]	2.650%	2019	—	250.0
Senior notes - fixed rate - Euro [(1)]	2.450%	2019	—	155.1
Senior notes - fixed rate [(1)]	3.625%	2020	74.0	74.0
Senior notes - fixed rate [(1)]	5.000%	2021	103.8	103.8
Senior notes - fixed rate [(1)]	3.150%	2022	88.3	88.3
Senior notes - fixed rate [(1)]	4.650%	2025	19.3	19.3
Senior notes - fixed rate [(1)]	4.500%	2029	400.0	—
Unamortized issuance costs and discounts	N/A	N/A	(9.9)	(5.1)
Total debt			$ 1,029.1	$ 787.6

(1) Senior notes ("the Notes") and the term loans are guaranteed as to payment by Pentair plc and PISG

In June 2019, Pentair, Pentair Finance S.à r.l. ("PFSA") and Pentair Investments Switzerland GmbH ("PISG") completed a public offering of $400.0 million aggregate principal amount of PFSA's 4.500% Senior Notes due 2029 (the "2029 Notes"). The 2029 Notes are fully and unconditionally guaranteed as to payment of principal and interest by Pentair and PISG. We used the net proceeds of the 2029 Notes to partially repay outstanding commercial paper.

In April 2018, Pentair, PISG, PFSA and Pentair, Inc. entered into a credit agreement, providing for an $800.0 million senior unsecured revolving credit facility with a term of five years (the "Senior Credit Facility"), with Pentair and PISG as guarantors and PFSA and Pentair, Inc. as borrowers. The Senior Credit Facility has a maturity date of April 25, 2023. Borrowings under the Senior Credit Facility bear interest at a rate equal to an adjusted base rate or the London Interbank Offered Rate, plus, in each case, an applicable margin. The applicable margin is based on, at PFSA's election, Pentair's leverage level or PFSA's public credit rating. In May 2019, PFSA executed an increase of the Senior Credit Facility by $100.0 million for a total commitment up to $900.0 million in the aggregate.

In December 2019, the Senior Credit Facility was amended to provide for the extension of term loans in an aggregate amount of $200.0 million (the "Term Loans"). The Term Loans are in addition to the Senior Credit Facility commitment. In addition, PFSA has the option to further increase the Senior Credit Facility in an aggregate amount of up to $300.0 million, through a combination of increases to the total commitment amount of the Senior Credit Facility and/or one or more tranches of term loans in addition to the Term Loans, subject to customary conditions, including the commitment of the participating lenders.

As of December 31, 2019, total availability under the Senior Credit Facility was $746.4 million.

PFSA is authorized to sell short-term commercial paper notes to the extent availability exists under the Senior Credit Facility. PFSA uses the Senior Credit Facility as back-up liquidity to support 100% of commercial paper outstanding. PFSA had $117.8 million of commercial paper outstanding as of December 31, 2019 and $76.0 million as of December 31, 2018, all of which was classified as long-term debt as we have the intent and the ability to refinance such obligations on a long-term basis under the Senior Credit Facility.

Our debt agreements contain various financial covenants, but the most restrictive covenants are contained in the Senior Credit Facility. The Senior Credit Facility contains covenants requiring us not to permit (i) the ratio of our consolidated debt (net of its consolidated unrestricted cash in excess of $5.0 million but not to exceed $250.0 million) to our consolidated net income (excluding, among other things, non-cash gains and losses) before interest, taxes, depreciation, amortization and non-cash share-based compensation expense ("EBITDA") on the last day of any period of four consecutive fiscal quarters to exceed 3.75 to 1.00 (the "Leverage Ratio") and (ii) the ratio of our EBITDA to our consolidated interest expense, for the same period to be less than 3.00 to 1.00 as of the end of each fiscal quarter. For purposes of the Leverage Ratio, the Senior Credit Facility provides for the calculation of EBITDA giving pro forma effect to certain acquisitions, divestitures and liquidations during the period to which such calculation relates.

In addition to the Senior Credit Facility, we have various other credit facilities with an aggregate availability of $21.0 million, of which there were no outstanding borrowings at December 31, 2019. Borrowings under these credit facilities bear interest at variable rates.

In 2018, we used the $993.6 million of cash received from nVent as a result of the Distribution to pay down commercial paper and revolving credit facilities, redeem the remaining $255.3 million aggregate principal of our 2.9% fixed rate senior notes due 2018, and complete a cash tender offer in the amount of €363.4 million aggregate principal of our 2.45% senior notes due 2019. All costs associated with the repurchases of debt were recorded as a *Loss on early extinguishment of debt* in the Consolidated Statements of Operations and Comprehensive Income*,* including $16.0 million premium paid on early extinguishment and $1.1 million of unamortized deferred financing costs.

We have $74.0 million aggregate principal amount of fixed rate senior notes maturing in 2020. We classified this debt as long-term as of December 31, 2019 as we have the intent and ability to refinance such obligation on a long-term basis under the Senior Credit Facility.

Debt outstanding, excluding unamortized issuance costs and discounts, at December 31, 2019 matures on a calendar year basis as follows:

In millions	2020	2021	2022	2023	2024	Thereafter	Total
Contractual debt obligation maturities	$ 74.0	$ 103.8	$ 88.3	$ 353.6	$ —	$ 419.3	$ 1,039.0

9. Derivatives and Financial Instruments

Derivative financial instruments

We are exposed to market risk related to changes in foreign currency exchange rates. To manage the volatility related to this exposure, we periodically enter into a variety of derivative financial instruments. Our objective is to reduce, where it is deemed appropriate to do so, fluctuations in earnings and cash flows associated with changes in foreign currency rates. The derivative contracts contain credit risk to the extent that our bank counterparties may be unable to meet the terms of the agreements. The amount of such credit risk is generally limited to the unrealized gains, if any, in such contracts. Such risk is minimized by limiting those counterparties to major financial institutions of high credit quality.

Foreign currency contracts

We conduct business in various locations throughout the world and are subject to market risk due to changes in the value of foreign currencies in relation to our reporting currency, the U.S. dollar. We manage our economic and transaction exposure to certain market-based risks through the use of foreign currency derivative financial instruments. Our objective in holding these derivatives is to reduce the volatility of net earnings and cash flows associated with changes in foreign currency exchange rates. The majority of our foreign currency contracts have an original maturity date of less than one year.

At December 31, 2019 and 2018, we had outstanding foreign currency derivative contracts with gross notional U.S. dollar equivalent amounts of $17.0 million and $47.6 million, respectively. The impact of these contracts on the Consolidated Statements of Operations and Comprehensive Income was not material for any period presented.

Cross currency swaps

At December 31, 2019 and 2018, we had outstanding cross currency swap agreements with a combined notional amount of $777.0 million and $283.8 million, respectively. The agreements are accounted for as either cash flow hedges, to hedge foreign currency fluctuations on certain intercompany debt, or as net investment hedges to manage our exposure to fluctuations in the Euro-U.S. Dollar exchange rate. As of December 31, 2019 and 2018, we had deferred foreign currency losses of $1.8 million and $14.5 million, respectively, recorded in *Accumulated other comprehensive loss* associated with our cross currency swap activity.

Foreign currency denominated debt
In September 2015, we designated the €500 million 2.45% Senior Notes due 2019 (the "2019 Euro Notes") as a net investment hedge for a portion of our net investment in our Euro denominated subsidiaries. In June 2018, the Company completed a tender offer for €363.4 million of the 2019 Euro Notes. At that time, the remaining €136.6 million of the 2019 Euro Notes were re-designated as a net investment hedge in our Euro denominated subsidiaries. In September 2019, the 2019 Euro Notes matured and were paid in full, terminating the net investment hedge. The historical gains/losses on the 2019 Euro Notes have been included as a component of the cumulative translation adjustment account within *Accumulated other comprehensive loss*. As of December 31, 2019 we had deferred foreign currency gains of $2.8 million and as of December 31, 2018 we had deferred foreign currency losses of $0.8 million, in *Accumulated other comprehensive loss* associated with the net investment hedge activity.

Fair value measurements
Fair value is defined 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. Assets and liabilities measured at fair value are classified using the following hierarchy, which is based upon the transparency of inputs to the valuation as of the measurement date:

Level 1: Valuation is based on observable inputs such as quoted market prices (unadjusted) for identical assets or liabilities in active markets.

Level 2: Valuation is based on inputs such as quoted market prices for similar assets or liabilities in active markets or other inputs that are observable for the asset or liability, either directly or indirectly, for substantially the full term of the financial instrument.

Level 3: Valuation is based upon other unobservable inputs that are significant to the fair value measurement.

In making fair value measurements, observable market data must be used when available. 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.

Fair value of financial instruments
The following methods were used to estimate the fair values of each class of financial instrument:

- *short-term financial instruments (cash and cash equivalents, accounts and notes receivable, accounts and notes payable and variable-rate debt)* — recorded amount approximates fair value because of the short maturity period;
- *long-term fixed-rate debt, including current maturities* — fair value is based on market quotes available for issuance of debt with similar terms, which are inputs that are classified as Level 2 in the valuation hierarchy defined by the accounting guidance;
- *foreign currency contract agreements* — fair values are determined through the use of models that consider various assumptions, including time value, yield curves, as well as other relevant economic measures, which are inputs that are classified as Level 2 in the valuation hierarchy defined by the accounting guidance; and
- *deferred compensation plan assets (mutual funds, common/collective trusts and cash equivalents for payment of certain non-qualified benefits for retired, terminated and active employees)* — fair value of mutual funds and cash equivalents are based on quoted market prices in active markets that are classified as Level 1 in the valuation hierarchy defined by the accounting guidance; fair value of common/collective trusts are valued at net asset value ("NAV"), which is based on the fair value of the underlying securities owned by the fund and divided by the number of shares outstanding.

The recorded amounts and estimated fair values of total debt, excluding unamortized issuance costs and discounts, at December 31 were as follows:

	2019		2018	
In millions	**Recorded Amount**	**Fair Value**	**Recorded Amount**	**Fair Value**
Variable rate debt	$ 353.6	$ 353.6	$ 102.2	$ 102.2
Fixed rate debt	685.4	732.2	690.5	691.8
Total debt	$ 1,039.0	$ 1,085.8	$ 792.7	$ 794.0

Financial assets and liabilities measured at fair value on a recurring and nonrecurring basis were as follows:

Recurring fair value measurements	**December 31, 2019**				
In millions	**Level 1**	**Level 2**	**Level 3**	**NAV**	**Total**
Foreign currency contract assets	$ —	$ 0.1	$ —	$ —	$ 0.1
Foreign currency contract liabilities	—	(11.6)	—	—	(11.6)
Deferred compensation plan assets	12.5	—	—	8.8	21.3
Total recurring fair value measurements	$ 12.5	$ (11.5)	$ —	$ 8.8	$ 9.8
Nonrecurring fair value measurements [(1)]					

Recurring fair value measurements	**December 31, 2018**				
In millions	**Level 1**	**Level 2**	**Level 3**	**NAV**	**Total**
Foreign currency contract liabilities	$ —	$ (30.6)	$ —	$ —	$ (30.6)
Deferred compensation plan assets	17.6	—	—	3.3	20.9
Total recurring fair value measurements	$ 17.6	$ (30.6)	$ —	$ 3.3	$ (9.7)
Nonrecurring fair value measurements [(1)]					

(1) During the years ended December 31, 2019 and 2018, we recorded impairment charges for cost method investments in the amount of $21.2 million and $12.0 million, respectively. In 2018, a valuation method using prices in active markets was utilized to determine the fair value. In 2019, we determined the value using unobservable inputs and wrote the balance of the cost method investments to zero.

10. Income Taxes

Income from continuing operations before income taxes consisted of the following:

	Years ended December 31		
In millions	**2019**	**2018**	**2017**
Federal [(1)]	$ (1.6)	$ (24.6)	$ (34.1)
International [(2)]	409.1	404.4	206.9
Income from continuing operations before income taxes	$ 407.5	$ 379.8	$ 172.8

(1) "Federal" reflects United Kingdom ("U.K.") loss from continuing operations before income taxes.

(2) "International" reflects non-U.K. income from continuing operations before income taxes.

The provision for income taxes consisted of the following:

	Years ended December 31		
In millions	**2019**	**2018**	**2017**
Currently payable (receivable)			
Federal [(1)]	$ —	$ (0.1)	$ —
International [(2)]	64.2	62.3	76.7
Total current taxes	64.2	62.2	76.7
Deferred			
International [(2)]	(18.4)	(4.1)	(18.0)
Total deferred taxes	(18.4)	(4.1)	(18.0)
Total provision for income taxes	$ 45.8	$ 58.1	$ 58.7

(1) "Federal" represents U.K. taxes.

(2) "International" represents non-U.K. taxes.

Reconciliations of the federal statutory income tax rate to our effective tax rate were as follows:

Percentages	Years ended December 31 2019	2018	2017
U.K. federal statutory income tax rate	19.0%	19.0%	19.3%
Tax effect of international operations [1]	(8.2)	(9.9)	(18.7)
Change in valuation allowances	1.1	7.9	27.6
Excess tax benefits on stock-based compensation	(0.7)	(1.7)	(4.5)
Tax effect of U.S. tax reform	—	(0.9)	1.3
Tax effect of early extinguishment of debt	—	0.9	9.0
Effective tax rate	11.2%	15.3%	34.0%

(1) The tax effect of international operations consists of non-U.K. jurisdictions.

Reconciliations of the beginning and ending gross unrecognized tax benefits were as follows:

In millions	Years ended December 31 2019	2018	2017
Beginning balance	$ 51.4	$ 13.8	$ 46.3
Gross increases for tax positions in prior periods	0.4	44.0	4.7
Gross decreases for tax positions in prior periods	(0.8)	(4.4)	(3.4)
Gross increases based on tax positions related to the current year	0.4	0.9	0.7
Gross decreases related to settlements with taxing authorities	(2.9)	(1.8)	(33.6)
Reductions due to statute expiration	(1.1)	(1.1)	(0.9)
Ending balance	$ 47.4	$ 51.4	$ 13.8

We record gross unrecognized tax benefits in *Other current liabilities* and *Other non-current liabilities* in the Consolidated Balance Sheets. Included in the $47.4 million of total gross unrecognized tax benefits as of December 31, 2019 was $47.0 million of tax benefits that, if recognized, would impact the effective tax rate. It is reasonably possible that the gross unrecognized tax benefits as of December 31, 2019 may decrease by a range of zero to $4.3 million during 2020, primarily as a result of the resolution of non-U.K. examinations, including U.S. state examinations, and the expiration of various statutes of limitations.

Based on the outcome of these examinations, or as a result of the expiration of statute of limitations for specific jurisdictions, it is reasonably possible that certain unrecognized tax benefits for tax positions taken on previously filed tax returns will materially change from those recorded as liabilities in our financial statements. A number of tax periods from 2008 to present are under audit by tax authorities in various jurisdictions, including China, Germany, India, Italy and New Zealand. We anticipate that several of these audits may be concluded in the foreseeable future.

We record penalties and interest related to unrecognized tax benefits in *Provision for income taxes* and *Net interest expense*, respectively, in the Consolidated Statements of Operations and Comprehensive Income. As of December 31, 2019 and 2018, we have liabilities of $0.4 million and $0.5 million, respectively, for the possible payment of penalties and $3.7 million and $3.6 million, respectively, for the possible payment of interest expense, which are recorded in *Other current liabilities* in the Consolidated Balance Sheets.

Deferred taxes arise because of different treatment between financial statement accounting and tax accounting, known as "temporary differences." We record the tax effect of these temporary differences as "deferred tax assets" (generally items that can be used as a tax deduction or credit in future periods) and "deferred tax liabilities" (generally items for which we received a tax deduction but the tax impact has not yet been recorded in the Consolidated Statements of Operations and Comprehensive Income).

Deferred taxes were recorded in the Consolidated Balance Sheets as follows:

	December 31	
In millions	**2019**	**2018**
Other non-current assets	$ 29.6	$ 26.2
Deferred tax liabilities	104.4	105.9
Net deferred tax liabilities	$ 74.8	$ 79.7

The tax effects of the major items recorded as deferred tax assets and liabilities were as follows:

	December 31	
In millions	**2019**	**2018**
Deferred tax assets		
Accrued liabilities and reserves	$ 41.9	$ 42.9
Pension and other post-retirement compensation and benefits	25.2	25.2
Employee compensation and benefits	19.6	21.8
Tax loss and credit carryforwards	712.0	724.7
Interest limitations	45.0	20.6
Total deferred tax assets	843.7	835.2
Valuation allowance	693.8	711.9
Deferred tax assets, net of valuation allowance	149.9	123.3
Deferred tax liabilities		
Property, plant and equipment	8.5	7.1
Goodwill and other intangibles	200.4	179.7
Other liabilities	15.8	16.2
Total deferred tax liabilities	224.7	203.0
Net deferred tax liabilities	$ 74.8	$ 79.7

Included in tax loss and credit carryforwards in the table above is a deferred tax asset of $29.6 million as of December 31, 2019 related to foreign tax credit carryover from the tax period ended December 31, 2017 and related to transition taxes. The entire amount is subject to a valuation allowance. The foreign tax credit is eligible for carryforward until the tax period ending December 31, 2027.

As of December 31, 2019, tax loss carryforwards of $2,957.4 million were available to offset future income. A valuation allowance of $663.1 million exists for deferred income tax benefits related to the tax loss carryforwards which may not be realized. We believe sufficient taxable income will be generated in the respective jurisdictions to allow us to fully recover the remainder of the tax losses. The tax losses primarily relate to non-U.S. carryforwards of $2,843.1 million which are subject to varying expiration periods. Non-U.S. carryforwards of $1,763.9 million are located in jurisdictions with unlimited tax loss carryforward periods, while the remainder will begin to expire in 2020. In addition, there were $14.6 million U.S. federal loss carryforwards with unlimited tax loss carryforward periods and $99.7 million of state tax loss carryforwards as of December 31, 2019. State tax losses of $64.0 million are in jurisdictions with unlimited tax loss carryforward periods, while the remainder will expire in future years through 2039.

U.S. tax reform

On December 22, 2017, the Tax Cuts and Jobs Act of 2017 (the "Act") was signed into law making significant changes to the Internal Revenue Code. Changes include, but are not limited to, a corporate tax rate decrease from 35% to 21% effective for tax years beginning after December 31, 2017, the transition of U.S international taxation from a worldwide tax system to a territorial system, and a one-time transition tax on the mandatory deemed repatriation of cumulative foreign earnings as of December 31, 2017. For 2018, the Company considered in its annual effective tax rate additional provisions of the Act including changes to the deduction for executive compensation and interest expense, a tax on global intangible low-taxed income provisions ("GILTI"), the base erosion anti-abuse tax, and a deduction for foreign-derived intangible income. The Company has elected to treat tax on GILTI income as a period cost and has therefore included it in its annual effective tax rate.

The Company calculated its best estimate of the impact of the Act in its December 31, 2017 income tax provision in accordance with its understanding of the Act and guidance available as of the date of the filing of the 2017 Annual Report on Form 10-K and as a result recorded a provisional income tax expense of $2.2 million in the fourth quarter of 2017, the period in which the legislation was enacted. We subsequently recorded a $3.6 million decrease to the provisional income tax expense in the third quarter of 2018, resulting in a $1.4 million net decrease to income tax expense as a result of the Act.

The amount related to the remeasurement of certain deferred tax assets and liabilities based on the rates at which they are expected to reverse in the future was a decrease to income tax expense of $28.0 million. The amount related to the one-time transition tax on the mandatory deemed repatriation of foreign earnings was an increase to income tax expense of $26.6 million. No additional income taxes have been provided for any remaining undistributed foreign earnings not subject to the transition tax, or any additional outside basis difference inherent in these entities, as these amounts continue to be indefinitely reinvested in foreign operations.

11. Benefit Plans

Pension and other post-retirement plans

We sponsor U.S. and non-U.S. defined-benefit pension and other post-retirement plans. Pension benefits are based principally on an employee's years of service and/or compensation levels near retirement. In addition, we provide certain post-retirement health care and life insurance benefits. Generally, the post-retirement health care and life insurance plans require contributions from retirees.

In 2017, our Board of Directors approved amendments to terminate the Pentair Salaried Plan (the "Salaried Plan"), a U.S. qualified pension plan. The Salaried Plan discontinued accruing benefits on December 31, 2017 and the termination was effective December 31, 2017. The Salaried Plan participants were not adversely affected by the plan termination.

In 2018, participants whose plan benefits were not in pay status as of July 1, 2018 were given the opportunity to elect a lump sum (or monthly annuity) payment during a special election window. Payments of $171.9 million were made to participants who elected to receive a lump sum during this window.

In 2019, the Company received all required government approvals to complete the termination of the Salaried Plan. In June 2019, we entered into an agreement with an insurance company to purchase from us, through an annuity contract, our remaining obligations under the Salaried Plan. For the year ended December 31, 2019, we contributed $11.1 million to the Salaried Plan as part of the process to settle our obligations. As a result of these actions, a non-cash pre-tax settlement gain of $11.8 million was recorded for the year ended December 31, 2019 and is reflected within *Net actuarial loss (gain)* in the Net periodic benefit expense table below.

As described in Note 1, during the first quarter of 2018, the Company adopted ASU 2017-07. As a result, service costs are classified as employee compensation costs within *Cost of goods sold* and *Selling, general and administrative expense* within the Consolidated Statements of Operations and Comprehensive Income. All other components of net periodic benefit expense are classified within *Other (income) expense* for the periods presented.

The information herein relates to defined-benefit pension and other post-retirement plans of our continuing operations only.

Obligations and funded status

The following tables present reconciliations of plan benefit obligations, fair value of plan assets and the funded status of pension plans and other post-retirement plans as of and for the years ended December 31, 2019 and 2018:

	Pension plans		Other post-retirement plans	
In millions	**2019**	**2018**	**2019**	**2018**
Change in benefit obligations				
Benefit obligation beginning of year	$ 277.9	$ 473.8	$ 14.9	$ 17.5
Service cost	2.6	4.1	—	—
Interest cost	7.3	11.5	0.6	0.6
Settlements	(1.5)	—	—	—
Actuarial loss (gain)	8.0	(23.6)	2.0	(1.4)
Foreign currency translation	0.1	(0.2)	—	—
Benefits paid	(182.3)	(187.7)	(2.9)	(1.8)
Benefit obligation end of year	$ 112.1	$ 277.9	$ 14.6	$ 14.9
Change in plan assets				
Fair value of plan assets beginning of year	$ 180.7	$ 382.8	$ —	$ —
Actual return on plan assets	16.0	(21.4)	—	—
Company contributions	18.0	7.1	2.9	1.8
Settlements	(1.5)	—	—	—
Foreign currency translation	0.1	(0.1)	—	—
Benefits paid	(182.3)	(187.7)	(2.9)	(1.8)
Fair value of plan assets end of year	$ 31.0	$ 180.7	$ —	$ —
Funded status				
Benefit obligations in excess of the fair value of plan assets	$ (81.1)	$ (97.2)	$ (14.6)	$ (14.9)

Amounts recorded in the Consolidated Balance Sheets were as follows:

	Pension plans		Other post-retirement plans	
In millions	**2019**	**2018**	**2019**	**2018**
Current liabilities	$ (5.3)	$ (28.3)	$ (1.7)	$ (1.7)
Non-current liabilities	(75.8)	(68.9)	(12.9)	(13.2)
Benefit obligations in excess of the fair value of plan assets	$ (81.1)	$ (97.2)	$ (14.6)	$ (14.9)

The accumulated benefit obligation for all defined benefit plans was $107.1 million and $275.0 million at December 31, 2019 and 2018, respectively.

Information for pension plans with an accumulated benefit obligation or projected benefit obligation in excess of plan assets as of December 31 was as follows:

	Projected benefit obligation exceeds the fair value of plan assets		Accumulated benefit obligation exceeds the fair value of plan assets	
In millions	**2019**	**2018**	**2019**	**2018**
Projected benefit obligation	$ 111.7	$ 277.9	$ 111.7	$ 270.6
Fair value of plan assets	30.4	180.7	30.4	173.7
Accumulated benefit obligation	N/A	N/A	107.1	268.3

Components of net periodic benefit expense for our pension plans for the years ended December 31 were as follows:

In millions	2019	2018	2017
Service cost	$ 2.6	$ 4.1	$ 11.7
Interest cost	7.3	11.5	16.4
Expected return on plan assets	(3.9)	(7.6)	(11.6)
Net actuarial (gain) loss	(4.1)	5.2	8.4
Net periodic benefit expense	$ 1.9	$ 13.2	$ 24.9

Components of net periodic benefit expense for our other post-retirement plans for the years ended December 31, 2019, 2018 and 2017, were not material.

Assumptions

The following table provides the weighted-average assumptions used to determine benefit obligations and net periodic benefit cost as they pertain to our pension and other post-retirement plans.

	Pension plans			Other post-retirement plans		
	2019	2018	2017	2019	2018	2017
Benefit obligation assumptions (1)						
Discount rate	2.68%	3.73%	4.00%	2.81%	3.95%	3.40%
Rate of compensation increase	3.68%	3.77%	3.96%	NA	NA	NA
Net periodic benefit expense assumptions						
Discount rate	3.70%	4.00%	3.94%	3.95%	3.40%	3.80%
Expected long-term return on plan assets	4.37%	4.17%	4.05%	NA	NA	NA
Rate of compensation increase	3.72%	3.96%	3.96%	NA	NA	NA

(1) The benefit obligation for the Salaried Plan as of December 31, 2018 was determined using assumptions reflecting the termination of the plan. As a result, the 2018 weighted-average assumptions for the pension plans reflected in the table above do not include the Salaried Plan.

Discount rates

The discount rate reflects the current rate at which the pension liabilities could be effectively settled at the end of the year based on our December 31 measurement date. The discount rate was determined by matching our expected benefit payments to payments from a stream of bonds rated AA or higher available in the marketplace, adjusted to eliminate the effects of call provisions. There are no known or anticipated changes in our discount rate assumptions that will impact our pension expense in 2020.

Expected rates of return

The expected rate of return is designed to be a long-term assumption that may be subject to considerable year-to-year variance from actual returns. In developing the expected long-term rate of return, we considered our historical returns, with consideration given to forecasted economic conditions, our asset allocations, input from external consultants and broader long-term market indices. Pension plan assets yielded returns of 8.85%, (5.60)% and 12.00% in 2019, 2018 and 2017, respectively.

Healthcare cost trend rates

The assumed healthcare cost trend rates for other post-retirement plans as of December 31 were as follows:

	2019	2018
Healthcare cost trend rate assumed for following year	5.8%	6.2%
Rate to which the cost trend rate is assumed to decline (the ultimate trend rate)	4.4%	4.4%
Year the cost trend rate reaches the ultimate trend rate	2038	2038

Pension plans assets

Objective

The primary objective of our investment strategy is to meet the pension obligation to our employees at a reasonable cost to us. This is primarily accomplished through growth of capital and safety of the funds invested.

Asset allocation

Our actual overall asset allocation for our pension plans as compared to our investment policy goals as of December 31 was as follows:

	Actual		Target	
	2019	**2018**	**2019**	**2018**
Fixed income	70%	87%	72%	95%
Alternative	29%	5%	28%	5%
Cash	1%	8%	—%	—%

Fair value measurement

The fair values of our pension plan assets and their respective levels in the fair value hierarchy as of December 31, 2019 and December 31, 2018 were as follows:

	December 31, 2019			
In millions	**Level 1**	**Level 2**	**Level 3**	**Total**
Cash and cash equivalents	$ 0.4	$ —	$ —	$ 0.4
Other investments	—	—	8.9	8.9
Total investments at fair value	$ 0.4	$ —	$ 8.9	$ 9.3
Investments measured at NAV				21.7
Total				$ 31.0

	December 31, 2018			
In millions	**Level 1**	**Level 2**	**Level 3**	**Total**
Cash and cash equivalents	$ —	$ 12.0	$ —	$ 12.0
Fixed income	—	137.5	—	137.5
Other investments	—	—	9.3	9.3
Total investments at fair value	$ —	$ 149.5	$ 9.3	$ 158.8
Investments measured at NAV				21.9
Total				$ 180.7

Valuation methodologies used for investments measured at fair value were as follows:

- ***Cash and cash equivalents:*** Cash consists of cash held in bank accounts and is considered a Level 1 investment. Cash equivalents consist of investments in commingled funds valued based on observable market data. Such investments were classified as Level 2.
- ***Fixed income:*** Investments in corporate bonds, government securities, mortgages and asset backed securities were valued based upon quoted market prices for similar securities and other observable market data. Investments in commingled funds were generally valued at the end of the period based upon the value of the underlying investments as determined by quoted market prices or by a pricing service. Such investments were classified as Level 2.
- ***Other investments:*** Other investments include investments in commingled funds with diversified investment strategies. Investments in commingled funds that were valued at the end of the period based upon the value of the underlying investments as determined by quoted market prices or by a pricing service were classified as Level 2. Investments in commingled funds that were valued based on unobservable inputs due to liquidation restrictions were classified as Level 3.

Activity for our Level 3 pension plan assets held during the years ended December 31, 2019 and 2018 was not material.

Cash flows

Contributions

Pension contributions from continuing operations totaled $18.0 million and $7.1 million in 2019 and 2018, respectively. We anticipate our 2020 pension contributions to be approximately $6.6 million. The 2020 expected contributions will equal or exceed our minimum funding requirements.

Estimated future benefit payments

The following benefit payments, which reflect expected future service or payout from termination, as appropriate, are expected to be paid by the plans in each of the next five fiscal years and in the aggregate for the five fiscal years thereafter are as follows:

In millions	**Pension plans**	**Other post-retirement plans**
2020	$ 6.8	$ 1.7
2021	6.8	1.6
2022	6.8	1.5
2023	7.2	1.4
2024	7.2	1.3
2025 - 2029	36.9	4.9

Savings plan

We have a 401(k) plan (the "401(k) plan") with an employee share ownership ("ESOP") bonus component, which covers certain union and all non-union U.S. employees who met certain age requirements. Under the 401(k) plan, eligible U.S. employees could voluntarily contribute a percentage of their eligible compensation. We match contributions made by employees who met certain eligibility and service requirements.

As of January 1, 2018, the 401(k) company match contribution was changed to a dollar-for-dollar (100%) matching contribution on up to 5% of employee eligible earnings, contributed as before-tax contributions. This change replaced the ESOP component discussed below and offers the same 5% total company match.

During 2017, the 401(k) matching contribution was 100% of eligible employee contributions for the first 1% of eligible compensation and 50% of the next 5% of eligible compensation.

During 2018 and 2017, in addition to the matching contribution, all employees who met certain service requirements received a discretionary ESOP contribution equal to 1.5% of annual eligible compensation.

Our combined expense for the 401(k) plan and the ESOP was $14.4 million, $23.4 million and $27.9 million in 2019, 2018 and 2017, respectively.

Other retirement compensation

Total other accrued retirement compensation, primarily related to deferred compensation and supplemental retirement plans, was $29.0 million and $28.2 million as of December 31, 2019 and 2018, respectively, and is included in *Pension and other post-retirement compensation and benefits* and *Other non-current liabilities* in the Consolidated Balance Sheets.

12. Shareholders' Equity

Authorized shares

Our authorized share capital consists of 426.0 million ordinary shares with a par value of $0.01 per share.

Share repurchases

In December 2014, the Board of Directors authorized the repurchase of our ordinary shares up to a maximum dollar limit of $1.0 billion (the "2014 Authorization). On May 8, 2018, the Board of Directors authorized the repurchase of our ordinary shares up to a maximum dollar limit of $750.0 million (the "2018 Authorization"), replacing the 2014 Authorization. The 2018 Authorization expires on May 31, 2021.

During the year ended December 31, 2018, we repurchased 10.2 million of our ordinary shares for $500.0 million, of which 2.2 million shares, or $150.0 million, and 8.0 million shares, or $350.0 million, were repurchased pursuant to the 2014 and 2018 Authorizations, respectively.

During the year ended December 31, 2019, we repurchased 4.0 million of our ordinary shares for $150.0 million pursuant to the 2018 Authorization.

As of December 31, 2019, we had $250.0 million available for share repurchases under the 2018 Authorization.

Dividends payable
On December 9, 2019, the Board of Directors approved a 6 percent increase in the company's regular quarterly dividend rate (from $0.18 per share to $0.19 per share) that was paid on February 7, 2020 to shareholders of record at the close of business on January 24, 2020. The balance of dividends payable included in *Other current liabilities* on our Consolidated Balance Sheets was $32.0 million at December 31, 2019. Dividends paid per ordinary share were $0.72, $1.05 and $1.38 for the years ended December 31, 2019, 2018 and 2017, respectively.

13. Share Plans

Share-based compensation expense
Total share-based compensation expense for 2019, 2018 and 2017 was as follows:

	December 31		
In millions	**2019**	**2018**	**2017**
Restricted stock units	$ 11.2	$ 8.9	$ 17.5
Stock options	4.5	4.6	10.5
Performance share units	5.7	7.4	11.6
Total share-based compensation expense	$ 21.4	$ 20.9	$ 39.6

Of the total share-based compensation expense noted above, $3.4 million and $7.6 million for the years ended December 31, 2018 and 2017, respectively, was reported as part of *(Loss) income from discontinued operations, net of tax.*

Share incentive plans
In 2012, our Board of Directors, and Tyco International Ltd. ("Tyco") as our sole shareholder at the time, approved the Pentair plc 2012 Stock and Incentive Plan (the "2012 Plan"). The 2012 Plan became effective on September 28, 2012 and authorizes the issuance of 9.0 million of our ordinary shares. The shares may be issued as new shares or from shares held in treasury. Our practice is to settle equity-based awards by issuing new shares. The 2012 Plan terminates in September 2022. The 2012 Plan allows for the granting to our officers, directors, employees and consultants of non-qualified stock options, incentive stock options, stock appreciation rights, performance shares, performance units, restricted shares, restricted stock units, deferred stock rights, annual incentive awards, dividend equivalent units and other equity-based awards.

The 2012 Plan is administered by our compensation committee (the "Committee"), which is made up of independent members of our Board of Directors. Employees eligible to receive awards under the 2012 Plan are managerial, administrative or other key employees who are in a position to make a material contribution to the continued profitable growth and long-term success of our company. The Committee has the authority to select the recipients of awards, determine the type and size of awards, establish certain terms and conditions of award grants and take certain other actions as permitted under the 2012 Plan. The 2012 Plan prohibits the Committee from re-pricing awards or canceling and reissuing awards at lower prices.

Non-qualified and incentive stock options
Under the 2012 Plan, we may grant stock options to any eligible employee with an exercise price equal to the market value of the shares on the dates the options were granted. Options generally vest one-third each year over a period of three years commencing on the grant date and expire 10 years after the grant date.

Restricted shares and restricted stock units
Under the 2012 Plan, eligible employees may be awarded restricted shares or restricted stock units of our common stock. Restricted shares and restricted stock units generally vest one-third each year over a period of three years commencing on the grant date, subject to continuous employment and certain other conditions. Restricted shares and restricted stock units are valued at market value on the date of grant and are expensed over the vesting period.

Stock appreciation rights, performance shares and performance units

Under the 2012 Plan, the Committee is permitted to issue these awards which are generally earned over a vesting period of three years and tied to specific financial metrics. PSUs are granted to certain employees that vest based on the satisfaction of a service period of three years and the achievement of certain performance metrics over that same period. Upon vesting, PSU holders receive dividends that accumulate during the vesting period. The fair value of these PSUs is determined based on the closing market price of the Company's ordinary shares at the date of grant. Compensation expense is recognized over the period an employee is required to provide service based on the estimated vesting of the PSUs granted. The estimated vesting of the PSUs is based on the probability of achieving certain financial performance metrics during the vesting period.

Stock options

The following table summarizes stock option activity under all plans for the year ended December 31, 2019:

Shares and intrinsic value in millions	Number of shares	Weighted-average exercise price	Weighted-average remaining contractual life (years)	Aggregate intrinsic value
Outstanding as of January 1, 2019	4.1	$ 35.77		
Granted	0.4	39.05		
Exercised	(0.6)	26.92		
Forfeited	(0.1)	44.56		
Outstanding as of December 31, 2019	3.8	$ 37.29	5.2	$ 34.1
Options exercisable as of December 31, 2019	2.9	$ 36.08	4.2	$ 30.2
Options expected to vest as of December 31, 2019	0.8	$ 41.35	8.3	$ 3.8

Fair value of options granted

The weighted average grant date fair value of options granted under Pentair plans in 2019, 2018 and 2017 was estimated to be $8.86, $10.92 and $12.59 per share, respectively. The total intrinsic value of options that were exercised during 2019, 2018 and 2017 was $9.5 million, $18.2 million and $34.3 million, respectively. At December 31, 2019, the total unrecognized compensation cost related to stock options was $4.0 million. This cost is expected to be recognized over a weighted average period of 1.7 years.

We estimated the fair value of each stock option award issued in the annual share-based compensation grant using a Black-Scholes option pricing model, modified for dividends and using the following assumptions:

	December 31		
	2019	2018	2017
Risk-free interest rate	2.89%	2.58%	1.65%
Expected dividend yield	1.78%	1.56%	2.35%
Expected share price volatility	23.3%	24.8%	26.9%
Expected term (years)	6.1	6.1	6.3

These estimates require us to make assumptions based on historical results, observance of trends in our share price, changes in option exercise behavior, future expectations and other relevant factors. If other assumptions had been used, share-based compensation expense, as calculated and recorded under the accounting guidance, could have been affected.

We based the expected life assumption on historical experience as well as the terms and vesting periods of the options granted. For purposes of determining expected volatility, we considered a rolling average of historical volatility measured over a period approximately equal to the expected option term. The risk-free rate for periods that coincide with the expected life of the options is based on the U.S. Treasury Department yield curve in effect at the time of grant.

Cash received from option exercises for the years ended December 31, 2019, 2018 and 2017 was $15.5 million, $19.5 million and $46.0 million, respectively. The actual tax benefit realized for the tax deductions from option exercised totaled $2.8 million, $5.6 million and $7.8 million for the years ended December 31, 2019, 2018 and 2017, respectively.

Restricted stock units

The following table summarizes restricted stock unit activity under all plans for the year ended December 31, 2019:

Shares in millions	Number of shares		Weighted average grant date fair value
Outstanding as of January 1, 2019	0.5	$	41.74
Granted	0.3		41.08
Vested	(0.2)		37.61
Outstanding as of December 31, 2019	0.6	$	42.16

As of December 31, 2019, there was $20.5 million of unrecognized compensation cost related to restricted share compensation arrangements granted under the 2012 Plan and previous plans. That cost is expected to be recognized over a weighted-average period of 1.1 years. The total fair value of shares vested during the years ended December 31, 2019, 2018 and 2017, was $9.3 million, $24.4 million and $21.7 million, respectively. The actual tax benefit realized for the year ended December 31, 2019 and 2018 was $0.1 million and $0.7 million, respectively. There were no actual tax benefits realized for the year ended December 31, 2017.

Performance share units

The following table summarizes performance share unit activity under all plans for the year ended December 31, 2019:

Shares in millions	Number of shares		Weighted average grant date fair value
Outstanding as of January 1, 2019	0.1	$	45.42
Granted	0.2		38.60
Outstanding as of December 31, 2019	0.3	$	41.62

The expense recognized each period is dependent upon our estimate of the number of shares that will ultimately be issued. As of December 31, 2019, there was $8.7 million of unrecognized compensation cost related to performance share compensation arrangements granted under the 2012 Plan and previous plans. That cost is expected to be recognized over a weighted-average period of 1.7 years. There were $0.2 million of actual tax benefits realized for both of the years ended December 31, 2019 and 2018. There were no actual tax benefits realized for the year ended December 31, 2017.

Electrical separation

In connection with the Separation and Distribution, the Company adjusted its outstanding equity awards on May 1, 2018 in accordance with the Employee Matters Agreement between Pentair and nVent. The outstanding awards will continue to vest over the original vesting period, which is generally three years from the grant date.

The RSUs, PSUs, and stock option awards issued before May 9, 2017 (the date of Pentair's announcement of its intention to separate its Water and Electrical businesses) were converted into awards of both Pentair and nVent regardless of which company the award holder was employed by immediately after the Separation. These awards were converted as follows:

- *Restricted stock units*: For every unvested Pentair RSU award held, the holder received one nVent RSU.
- *Performance share units*: Pentair PSUs were converted to Pentair RSUs immediately after the Distribution. The PSUs granted in 2016 were converted at rate of 125% of target, and the PSUs granted in 2017 were converted at a rate of 100% of target. For every converted RSU, the shareholder also received one nVent RSU. The converted RSUs retain the original vesting schedule of the awarded PSUs.
- *Stock options:* Every holder of unexercised (vested and unvested) Pentair stock options received both adjusted stock options of Pentair and stock options of nVent, with the number of underlying shares and the exercise price adjusted accordingly to preserve the overall intrinsic value of the awards. The number of Pentair stock options was converted based upon the ratio of Pentair's pre-Distribution stock price divided by the sum of the Pentair and nVent post-Distribution closing prices. The exercise price for the converted Pentair stock options was adjusted based on the Pentair post-Distribution closing price divided by the Pentair pre-Distribution closing price.

The number of new nVent stock options awarded is the same as the converted number of Pentair stock options calculated as described above. The exercise price for the new nVent stock options was calculated based on nVent's post-Distribution closing price divided by the Pentair pre-Distribution closing price.

Generally, unvested awards issued after May 9, 2017 were converted to awards of the Company that the shareholder was employed by immediately after the Separation, with adjustments to the number of underlying shares as appropriate to preserve the intrinsic value of such awards immediately prior to the Distribution. The adjustment of the underlying shares was based on the ratio of Pentair's pre-Distribution stock price divided by the post-Distribution closing price of the respective company's ordinary shares. The exercise prices of the stock options were converted using the inverse ratio in a manner designed to preserve the intrinsic value of such awards.

14. Segment Information

We classify our operations into the following business segments:

- ***Aquatic Systems*** - This segment manufactures and sells a complete line of energy-efficient residential and commercial pool equipment and accessories including pumps, filters, heaters, lights, automatic controls, automatic cleaners, maintenance equipment and pool accessories. Applications for our Aquatic Systems products include residential and commercial pool maintenance, pool repair, renovation, service and construction and aquaculture solutions.

- ***Filtration Solutions*** - This segment manufactures and sells water and fluid treatment products and systems, including pressure tanks and vessels, control valves, activated carbon products, conventional filtration products, point-of-entry and point-of-use systems, gas recovery solutions, membrane bioreactors, wastewater reuse systems and advanced membrane filtration and separation systems into the global residential, industrial and commercial markets. These products are used in a range of applications, including use in fluid filtration, ion exchange, desalination, food and beverage, food service and separation technologies for the oil and gas industry.

- ***Flow Technologies*** - This segment manufactures and sells products ranging from light duty diaphragm pumps to high-flow turbine pumps and solid handling pumps while serving the global residential, commercial and industrial markets. These pumps are used in a range of applications, including residential and municipal wells, water treatment, wastewater solids handling, pressure boosting, fluid delivery, circulation and transfer, fire suppression, flood control, agricultural irrigation and crop spray.

We evaluate performance based on net sales and segment income (loss) and use a variety of ratios to measure performance of our reporting segments. These results are not necessarily indicative of the results of operations that would have occurred had each segment been an independent, stand-alone entity during the periods presented. Segment income (loss) represents equity income of unconsolidated subsidiaries and operating income exclusive of intangible amortization, certain acquisition related expenses, costs of restructuring activities, impairments and other unusual non-operating items.

Financial information by reportable segment is included in the following summary:

	2019	2018	2017	2019	2018	2017
In millions	Net sales			Segment income (loss)		
Aquatic Systems	$ 985.3	$ 1,026.1	$ 939.6	$ 268.9	$ 277.6	$ 254.1
Filtration Solutions	1,066.9	1,001.0	990.6	171.3	168.5	154.5
Flow Technologies	903.6	936.7	914.2	138.4	145.6	140.6
Other	1.4	1.3	1.3	(62.3)	(54.9)	(52.7)
Consolidated [(1)]	$ 2,957.2	$ 2,965.1	$ 2,845.7	$ 516.3	$ 536.8	$ 496.5

(1) One customer in the Aquatic Systems segment, Pool Corporation, represented approximately 15% of our consolidated net sales in 2019, 2018 and 2017.

	2019	2018	2017	2019	2018	2017	2019	2018	2017
In millions	Identifiable assets [(1)]			Capital expenditures			Depreciation		
Aquatic Systems	$ 1,340.1	$ 1,304.2	$ 1,323.0	$ 11.1	$ 10.6	$ 9.6	$ 8.3	$ 8.1	$ 10.6
Filtration Solutions	1,552.6	1,232.4	1,333.3	26.3	16.6	19.2	22.5	23.2	21.6
Flow Technologies	1,000.0	1,003.6	1,010.8	14.1	10.3	7.3	12.0	13.1	13.4
Other	246.8	266.3	4,966.6	7.0	10.7	3.0	5.5	5.3	5.2
Consolidated	$ 4,139.5	$ 3,806.5	$ 8,633.7	$ 58.5	$ 48.2	$ 39.1	$ 48.3	$ 49.7	$ 50.8

(1) All cash and cash equivalents and assets held for sale are included in "Other."

The following table presents a reconciliation of consolidated segment income to consolidated income from continuing operations before income taxes:

In millions	2019	2018	2017
Segment income	$ 516.3	$ 536.8	$ 496.5
Restructuring and other	(21.0)	(31.8)	(28.2)
Inventory step-up	(2.2)	—	—
Intangible amortization	(31.7)	(34.9)	(36.4)
Pension and other post-retirement mark-to-market gain (loss)	3.4	(3.6)	(8.5)
Trade name and other impairment	(21.2)	(12.0)	(15.6)
Gain (loss) on sale of businesses	2.2	(7.3)	(4.2)
Loss on early extinguishment of debt	—	(17.1)	(101.4)
Interest expense, net	(30.1)	(32.6)	(87.3)
Corporate allocations	—	(11.0)	(36.7)
Deal related costs and expenses	(4.2)	(2.0)	—
Other expense	(4.0)	(4.7)	(5.4)
Income from continuing operations before income taxes	$ 407.5	$ 379.8	$ 172.8

15. Commitments and Contingencies

Leases

We determine if an arrangement is a lease at inception. Our lease portfolio principally consists of operating leases related to facilities, machinery, equipment and vehicles. Our lease terms do not include options to extend or terminate the lease until we are reasonably certain that we will exercise that option. Operating lease cost for lease payments is recognized on a straight-line basis over the lease term and principally consists of fixed payments for base rent.

The components of lease cost was as follows:

In millions	December 31, 2019
Operating lease cost	$ 32.5
Sublease income	(1.0)
Total lease cost	$ 31.5

Supplemental cash flow information related to leases was as follows:

In millions	December 31, 2019
Operating cash flows from operating leases	$ 26.8
Right-of-use assets obtained in exchange for lease obligations	$ 91.1

Other information related to leases was as follows:

	December 31, 2019
Weighted-average remaining lease term of operating leases	5.2
Weighted-average discount rate of operating leases	6.3%

Future minimum lease commitments under non-cancelable operating leases as of December 31, 2019 were as follows:

In millions	**Operating Leases**
2020	$ 23.3
2021	18.8
2022	16.3
2023	13.9
2024	11.0
Thereafter	11.0
Total lease payments	94.3
Less: imputed interest	(14.2)
Total	$ 80.1

Future minimum lease commitments under non-cancelable operating leases based on accounting standards applicable as of December 31, 2018 were as follows:

In millions	**Operating Leases**
2019	$ 23.2
2020	17.6
2021	13.3
2022	11.1
2023	9.5
Thereafter	13.8
Total	$ 88.5

Warranties and guarantees

In connection with the disposition of our businesses or product lines, we may agree to indemnify purchasers for various potential liabilities relating to the sold business, such as pre-closing tax, product liability, warranty, environmental, or other obligations. The subject matter, amounts and duration of any such indemnification obligations vary for each type of liability indemnified and may vary widely from transaction to transaction.

Generally, the maximum obligation under such indemnifications is not explicitly stated and as a result, the overall amount of these obligations cannot be reasonably estimated. Historically, we have not made significant payments for these indemnifications. We believe that if we were to incur a loss in any of these matters, the loss would not have a material effect on our financial position, results of operations or cash flows.

We recognize, at the inception of a guarantee, a liability for the fair value of the obligation undertaken in issuing the guarantee. In connection with the disposition of the Valves & Controls business, we agreed to indemnify Emerson Electric Co. for certain pre-closing tax liabilities. We have recorded a liability representing the fair value of our expected future obligation for this matter.

We provide service and warranty policies on our products. Liability under service and warranty policies is based upon a review of historical warranty and service claim experience. Adjustments are made to accruals as claim data and historical experience warrant.

The changes in the carrying amount of service and product warranties for the years ended December 31, 2019, 2018 and 2017 were as follows:

	Years ended December 31		
In millions	**2019**	**2018**	**2017**
Beginning balance	$ 33.9	$ 38.1	$ 36.3
Service and product warranty provision	53.8	50.8	60.8
Payments	(55.5)	(54.6)	(59.6)
Foreign currency translation	(0.1)	(0.4)	0.6
Ending balance	$ 32.1	$ 33.9	$ 38.1

Stand-by letters of credit, bank guarantees and bonds

In certain situations, Tyco guaranteed performance by the flow control business of Pentair Ltd. ("Flow Control") to third parties or provided financial guarantees for financial commitments of Flow Control. In situations where Flow Control and Tyco were unable to obtain a release from these guarantees in connection with the spin-off of Flow Control from Tyco, we will indemnify Tyco for any losses it suffers as a result of such guarantees.

In the ordinary course of business, we are required to commit to bonds, letters of credit and bank guarantees that require payments to our customers for any non-performance. The outstanding face value of these instruments fluctuates with the value of our projects in process and in our backlog. In addition, we issue financial stand-by letters of credit primarily to secure our performance to third parties under self-insurance programs.

As of December 31, 2019 and 2018, the outstanding value of bonds, letters of credit and bank guarantees totaled $91.3 million and $123.6 million, respectively.

Other matters

In addition to the matters described above, from time to time, we are subject to disputes, administrative proceedings and other claims relating to the conduct of our business. These matters include, without limitation, claims relating to commercial or contractual disputes with suppliers, customers or parties to acquisitions and divestitures, intellectual property matters, environmental, safety and health matters, product liability, the use or installation of our products, consumer matters, and employment and labor matters. On the basis of information currently available to it, management does not believe that existing proceedings and claims will have a material impact on our Consolidated Financial Statements. However, litigation is unpredictable, and we could incur judgments or enter into settlements for current or future claims that could adversely affect our financial statements.

16. Selected Quarterly Data (Unaudited)

The following tables present 2019 and 2018 quarterly financial information:

	2019				
In millions, except per-share data	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Full Year
Net sales	$ 688.9	$ 799.5	$ 713.6	$ 755.2	$ 2,957.2
Gross profit	235.6	286.7	255.0	274.2	1,051.5
Operating income	67.6	133.8	108.8	122.3	432.5
Net income from continuing operations	52.4	115.1	91.3	102.9	361.7
(Loss) income from discontinued operations, net of tax	(1.1)	(0.8)	1.0	(5.1)	(6.0)
Net income	51.3	114.3	92.3	97.8	355.7
Earnings (loss) per ordinary share (1)					
Basic					
Continuing operations	$ 0.31	$ 0.68	$ 0.54	$ 0.61	$ 2.14
Discontinued operations	(0.01)	(0.01)	0.01	(0.03)	(0.04)
Basic earnings per ordinary share	$ 0.30	$ 0.67	$ 0.55	$ 0.58	$ 2.10
Diluted					
Continuing operations	$ 0.30	$ 0.68	$ 0.54	$ 0.61	$ 2.12
Discontinued operations	—	(0.01)	0.01	(0.03)	(0.03)
Diluted earnings per ordinary share	$ 0.30	$ 0.67	$ 0.55	$ 0.58	$ 2.09

(1) Amounts may not total to annual earnings because each quarter and year are calculated separately based on basic and diluted weighted-average ordinary shares outstanding during that period.

	2018				
In millions, except per-share data	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Full Year
Net sales	$ 732.6	$ 780.6	$ 711.4	$ 740.5	$ 2,965.1
Gross profit	253.3	282.6	243.8	268.0	1,047.7
Operating income	92.7	122.6	108.4	113.0	436.7
Net income from continuing operations	58.4	77.9 (1)	91.2	94.2	321.7
Income (loss) from discontinued operations, net of tax	44.5	(36.4)	18.9	(1.3)	25.7
Net income	102.9	41.5	110.1	92.9	347.4
Earnings (loss) per ordinary share (2)					
Basic					
Continuing operations	$ 0.33	$ 0.44	$ 0.52	$ 0.55	$ 1.83
Discontinued operations	0.24	(0.21)	0.11	(0.01)	0.15
Basic earnings per ordinary share	$ 0.57	$ 0.23	$ 0.63	$ 0.54	$ 1.98
Diluted					
Continuing operations	$ 0.32	$ 0.44	$ 0.52	$ 0.54	$ 1.81
Discontinued operations	0.25	(0.21)	0.11	(0.01)	0.15
Diluted earnings per ordinary share	$ 0.57	$ 0.23	$ 0.63	$ 0.53	$ 1.96

(1) Includes decrease of $17.1 million related to loss on early extinguishment of debt.

(2) Amounts may not total to annual earnings because each quarter and year are calculated separately based on basic and diluted weighted-average ordinary shares outstanding during that period.

17. Supplemental Guarantor Information

Pentair plc (the "Parent Company Guarantor") and Pentair Investments Switzerland GmbH (the "Subsidiary Guarantor"), fully and unconditionally, guarantee the Notes of Pentair Finance S.à r.l. (the "Subsidiary Issuer"). The Subsidiary Guarantor is a Switzerland limited liability company formed in April 2014 and 100 percent-owned subsidiary of the Parent Company Guarantor. The Subsidiary Issuer is a Luxembourg public limited liability company formed in January 2012 and 100 percent-owned subsidiary of the Subsidiary Guarantor. The guarantees provided by the Parent Company Guarantor and Subsidiary Guarantor are joint and several.

The following supplemental financial information sets forth the Company's Condensed Consolidating Statement of Operations and Comprehensive Income and Condensed Consolidating Statement of Cash Flows for the years ended December 31, 2019, 2018 and 2017 and Condensed Consolidating Balance Sheet as of December 31, 2019 and 2018. Condensed Consolidating financial information for Pentair plc, Pentair Investments Switzerland GmbH and Pentair Finance S.à r.l. on a stand-alone basis is presented using the equity method of accounting for subsidiaries.

Pentair plc and Subsidiaries
Condensed Consolidating Statement of Operations and Comprehensive Income (Loss)
Year Ended December 31, 2019

In millions	Parent Company Guarantor	Subsidiary Guarantor	Subsidiary Issuer	Non-guarantor Subsidiaries	Eliminations	Consolidated Total
Net sales	$ —	$ —	$ —	$ 2,957.2	$ —	$ 2,957.2
Cost of goods sold	—	—	—	1,905.7	—	1,905.7
Gross profit	—	—	—	1,051.5	—	1,051.5
Selling, general and administrative	12.5	0.1	1.3	526.2	—	540.1
Research and development	—	—	—	78.9	—	78.9
Operating (loss) income	(12.5)	(0.1)	(1.3)	446.4	—	432.5
(Earnings) loss from continuing operations of investment in subsidiaries	(374.2)	(376.3)	(382.2)	—	1,132.7	—
Other (income) expense:						
Gain on sale of businesses	—	—	—	(2.2)	—	(2.2)
Net interest expense	—	2.0	4.6	23.5	—	30.1
Other income	—	—	—	(2.9)	—	(2.9)
Income (loss) from continuing operations before income taxes	361.7	374.2	376.3	428.0	(1,132.7)	407.5
Provision for income taxes	—	—	—	45.8	—	45.8
Net income (loss) from continuing operations	361.7	374.2	376.3	382.2	(1,132.7)	361.7
Loss from discontinued operations, net of tax	—	—	—	(6.0)	—	(6.0)
(Loss) earnings from discontinued operations of investment in subsidiaries	(6.0)	(6.0)	(6.0)	—	18.0	—
Net income (loss)	$ 355.7	$ 368.2	$ 370.3	$ 376.2	$ (1,114.7)	$ 355.7
Comprehensive income (loss), net of tax						
Net income (loss)	$ 355.7	$ 368.2	$ 370.3	$ 376.2	$ (1,114.7)	$ 355.7
Changes in cumulative translation adjustment	(15.3)	(15.3)	(15.3)	(15.3)	45.9	(15.3)
Changes in market value of derivative financial instruments, net of tax	17.4	17.4	17.4	17.4	(52.2)	17.4
Comprehensive income (loss)	$ 357.8	$ 370.3	$ 372.4	$ 378.3	$ (1,121.0)	$ 357.8

Pentair plc and Subsidiaries
Condensed Consolidating Balance Sheet
December 31, 2019

In millions	Parent Company Guarantor	Subsidiary Guarantor	Subsidiary Issuer	Non-guarantor Subsidiaries	Eliminations	Consolidated Total
Assets						
Current assets						
Cash and cash equivalents	$ —	$ —	$ 0.1	$ 82.4	$ —	$ 82.5
Accounts and notes receivable, net	0.2	—	2.4	501.1	(0.8)	502.9
Inventories	—	—	—	377.4	—	377.4
Other current assets	1.2	—	0.2	97.7	—	99.1
Total current assets	1.4	—	2.7	1,058.6	(0.8)	1,061.9
Property, plant and equipment, net	—	—	—	283.2	—	283.2
Other assets						
Investments in subsidiaries	1,904.5	1,904.0	2,789.6	—	(6,598.1)	—
Goodwill	—	—	—	2,258.3	—	2,258.3
Intangibles, net	—	—	—	339.2	—	339.2
Other non-current assets	110.6	0.9	1,278.7	184.1	(1,377.4)	196.9
Total other assets	2,015.1	1,904.9	4,068.3	2,781.6	(7,975.5)	2,794.4
Total assets	$ 2,016.5	$ 1,904.9	$ 4,071.0	$ 4,123.4	$ (7,976.3)	$ 4,139.5
Liabilities and Equity						
Current liabilities						
Accounts payable	$ 2.4	$ 0.1	$ 0.1	$ 323.3	$ (0.8)	$ 325.1
Employee compensation and benefits	0.1	—	—	70.9	—	71.0
Other current liabilities	39.7	0.3	13.1	299.8	—	352.9
Total current liabilities	42.2	0.4	13.2	694.0	(0.8)	749.0
Other liabilities						
Long-term debt	—	—	2,154.0	252.5	(1,377.4)	1,029.1
Pension and other post-retirement compensation and benefits	—	—	—	96.4	—	96.4
Deferred tax liabilities	—	—	—	104.4	—	104.4
Other non-current liabilities	20.4	—	—	186.3	—	206.7
Total liabilities	62.6	0.4	2,167.2	1,333.6	(1,378.2)	2,185.6
Equity	1,953.9	1,904.5	1,903.8	2,789.8	(6,598.1)	1,953.9
Total liabilities and equity	$ 2,016.5	$ 1,904.9	$ 4,071.0	$ 4,123.4	$ (7,976.3)	$ 4,139.5

Pentair plc and Subsidiaries
Condensed Consolidating Statement of Cash Flows
Year Ended December 31, 2019

In millions	Parent Company Guarantor	Subsidiary Guarantor	Subsidiary Issuer	Non-guarantor Subsidiaries	Eliminations	Consolidated Total
Operating activities						
Net cash provided by (used for) operating activities	$ 361.6	$ 367.1	$ 381.0	$ 340.0	$ (1,096.7)	$ 353.0
Investing activities						
Capital expenditures	—	—	—	(58.5)	—	(58.5)
Proceeds from sale of property and equipment	—	—	—	0.6	—	0.6
Proceeds from sale of businesses	—	—	—	15.3	—	15.3
Acquisitions, net of cash acquired	—	—	—	(287.8)	—	(287.8)
Net intercompany loan activity	(127.8)	(131.7)	(309.9)	203.6	365.8	—
Other	—	—	—	(1.5)	—	(1.5)
Net cash (used for) provided by investing activities	(127.8)	(131.7)	(309.9)	(128.3)	365.8	(331.9)
Financing activities						
Net receipts of commercial paper and revolving long-term debt	—	—	41.9	9.6	—	51.5
Proceeds from long-term debt	—	—	600.0	—	—	600.0
Repayment of long-term debt	—	—	(401.5)	—	—	(401.5)
Net change in advances to subsidiaries	26.3	(235.4)	(301.0)	(220.8)	730.9	—
Shares issued to employees, net of shares withheld	12.5	—	—	—	—	12.5
Repurchases of ordinary shares	(150.0)	—	—	—	—	(150.0)
Dividends paid	(122.7)	—	—	—	—	(122.7)
Other	—	—	(6.9)	—	—	(6.9)
Net cash (used for) provided by financing activities	(233.9)	(235.4)	(67.5)	(211.2)	730.9	(17.1)
Effect of exchange rate changes on cash and cash equivalents	—	—	(3.6)	7.8	—	4.2
Change in cash and cash equivalents	(0.1)	—	—	8.3	—	8.2
Cash and cash equivalents, beginning of year	0.1	—	0.1	74.1	—	74.3
Cash and cash equivalents, end of year	$ —	$ —	$ 0.1	$ 82.4	$ —	$ 82.5

Pentair plc and Subsidiaries
Condensed Consolidating Statement of Operations and Comprehensive Income (Loss)
Year Ended December 31, 2018

In millions	Parent Company Guarantor	Subsidiary Guarantor	Subsidiary Issuer	Non-guarantor Subsidiaries	Eliminations	Consolidated Total
Net sales	$ —	$ —	$ —	$ 2,965.1	$ —	$ 2,965.1
Cost of goods sold	—	—	—	1,917.4	—	1,917.4
Gross profit	—	—	—	1,047.7	—	1,047.7
Selling, general and administrative	11.8	0.9	1.2	520.4	—	534.3
Research and development	—	—	—	76.7	—	76.7
Operating (loss) income	(11.8)	(0.9)	(1.2)	450.6	—	436.7
(Earnings) loss from continuing operations of investment in subsidiaries	(333.5)	(333.4)	(376.5)	—	1,043.4	—
Other (income) expense:						
Loss on sale of businesses	—	—	—	7.3	—	7.3
Loss on early extinguishment of debt	—	—	17.1	—	—	17.1
Net interest (income) expense	—	(1.0)	24.8	8.8	—	32.6
Other income	—	—	—	(0.1)	—	(0.1)
Income (loss) from continuing operations before income taxes	321.7	333.5	333.4	434.6	(1,043.4)	379.8
Provision for income taxes	—	—	—	58.1	—	58.1
Net income (loss) from continuing operations	321.7	333.5	333.4	376.5	(1,043.4)	321.7
Income from discontinued operations, net of tax	—	—	—	25.7	—	25.7
Earnings (loss) from discontinued operations of investment in subsidiaries	25.7	25.7	25.7	—	(77.1)	—
Net income (loss)	$ 347.4	$ 359.2	$ 359.1	$ 402.2	$ (1,120.5)	$ 347.4
Comprehensive income (loss), net of tax						
Net income (loss)	$ 347.4	$ 359.2	$ 359.1	$ 402.2	$ (1,120.5)	$ 347.4
Changes in cumulative translation adjustment	10.0	10.0	10.0	10.0	(30.0)	10.0
Changes in market value of derivative financial instruments, net of tax	4.8	4.8	4.8	4.8	(14.4)	4.8
Comprehensive income (loss)	$ 362.2	$ 374.0	$ 373.9	$ 417.0	$ (1,164.9)	$ 362.2

Pentair plc and Subsidiaries
Condensed Consolidating Balance Sheet
December 31, 2018

In millions	Parent Company Guarantor	Subsidiary Guarantor	Subsidiary Issuer	Non-guarantor Subsidiaries	Eliminations	Consolidated Total
Assets						
Current assets						
Cash and cash equivalents	$ 0.1	$ —	$ 0.1	$ 74.1	$ —	$ 74.3
Accounts and notes receivable, net	4.6	—	—	483.6	—	488.2
Inventories	—	—	—	387.5	—	387.5
Other current assets	3.4	—	2.2	99.2	(15.4)	89.4
Total current assets	8.1	—	2.3	1,044.4	(15.4)	1,039.4
Property, plant and equipment, net	—	—	—	272.6	—	272.6
Other assets						
Investments in subsidiaries	1,903.8	2,036.1	2,675.7	—	(6,615.6)	—
Goodwill	—	—	—	2,072.7	—	2,072.7
Intangibles, net	—	—	—	276.3	—	276.3
Other non-current assets	23.3	—	696.1	729.7	(1,303.6)	145.5
Total other assets	1,927.1	2,036.1	3,371.8	3,078.7	(7,919.2)	2,494.5
Total assets	$ 1,935.2	$ 2,036.1	$ 3,374.1	$ 4,395.7	$ (7,934.6)	$ 3,806.5
Liabilities and Equity						
Current liabilities						
Accounts payable	$ 0.9	$ —	$ —	$ 377.7	$ —	$ 378.6
Employee compensation and benefits	0.2	—	—	111.5	—	111.7
Other current liabilities	47.6	1.5	4.4	290.3	(15.4)	328.4
Total current liabilities	48.7	1.5	4.4	779.5	(15.4)	818.7
Other liabilities						
Long-term debt	29.9	130.8	1,333.9	596.6	(1,303.6)	787.6
Pension and other post-retirement compensation and benefits	—	—	—	90.0	—	90.0
Deferred tax liabilities	—	—	—	105.9	—	105.9
Other non-current liabilities	20.5	—	—	147.7	—	168.2
Total liabilities	99.1	132.3	1,338.3	1,719.7	(1,319.0)	1,970.4
Equity	1,836.1	1,903.8	2,035.8	2,676.0	(6,615.6)	1,836.1
Total liabilities and equity	$ 1,935.2	$ 2,036.1	$ 3,374.1	$ 4,395.7	$ (7,934.6)	$ 3,806.5

Pentair plc and Subsidiaries
Condensed Consolidating Statement of Cash Flows
Year Ended December 31, 2018

In millions	Parent Company Guarantor	Subsidiary Guarantor	Subsidiary Issuer	Non-guarantor Subsidiaries	Eliminations	Consolidated Total
Operating activities						
Net cash provided by (used for) operating activities	$ 266.3	$ 362.1	$ 370.6	$ 637.7	$ (1,197.6)	$ 439.1
Investing activities						
Capital expenditures	—	—	—	(48.2)	—	(48.2)
Proceeds from sale of property and equipment	—	—	—	0.2	—	0.2
Payments due to sale of businesses	—	—	—	(12.8)	—	(12.8)
Acquisitions, net of cash acquired	—	—	—	(0.9)	—	(0.9)
Net intercompany loan activity	—	94.1	181.0	1,655.7	(1,930.8)	—
Net cash provided by (used for) investing activities of continuing operations	—	94.1	181.0	1,594.0	(1,930.8)	(61.7)
Net cash used for investing activities from discontinued operations	—	—	—	(7.1)	—	(7.1)
Net cash provided by (used for) investing activities	—	94.1	181.0	1,586.9	(1,930.8)	(68.8)
Financing activities						
Net receipts (repayments) of commercial paper and revolving long-term debt	—	—	41.9	(2.2)	—	39.7
Repayment of long-term debt	—	—	(675.1)	—	—	(675.1)
Premium paid on early extinguishment of debt	—	—	(16.0)	—	—	(16.0)
Distribution of cash from nVent, net of cash transferred	—	—	993.6	(74.2)	—	919.4
Net change in advances to subsidiaries	407.7	(456.2)	(874.6)	(2,205.3)	3,128.4	—
Shares issued to employees, net of shares withheld	13.3	—	—	—	—	13.3
Repurchases of ordinary shares	(500.0)	—	—	—	—	(500.0)
Dividends paid	(187.2)	—	—	—	—	(187.2)
Other	—	—	(2.0)	—	—	(2.0)
Net cash provided by (used for) financing activities	(266.2)	(456.2)	(532.2)	(2,281.7)	3,128.4	(407.9)
Change in cash held for sale	—	—	—	27.0	—	27.0
Effect of exchange rate changes on cash and cash equivalents	—	—	(19.3)	17.9	—	(1.4)
Change in cash and cash equivalents	0.1	—	0.1	(12.2)	—	(12.0)
Cash and cash equivalents, beginning of year	—	—	—	86.3	—	86.3
Cash and cash equivalents, end of year	$ 0.1	$ —	$ 0.1	$ 74.1	$ —	$ 74.3

Pentair plc and Subsidiaries
Condensed Consolidating Statement of Operations and Comprehensive Income (Loss)
Year Ended December 31, 2017

In millions	Parent Company Guarantor	Subsidiary Guarantor	Subsidiary Issuer	Non-guarantor Subsidiaries	Eliminations	Consolidated Total
Net sales	$ —	$ —	$ —	$ 2,845.7	$ —	$ 2,845.7
Cost of goods sold	—	—	—	1,858.2	—	1,858.2
Gross profit	—	—	—	987.5	—	987.5
Selling, general and administrative	9.0	0.6	—	526.4	—	536.0
Research and development	—	—	—	73.2	—	73.2
Operating (loss) income	(9.0)	(0.6)	—	387.9	—	378.3
(Earnings) loss from continuing operations of investment in subsidiaries	(122.2)	(122.2)	(283.4)	—	527.8	—
Other (income) expense:						
Loss on sale of businesses	—	—	—	4.2	—	4.2
Loss on early extinguishment of debt	—	—	91.0	10.4	—	101.4
Net interest (income) expense	—	(0.6)	70.7	17.2	—	87.3
Other expense	—	—	—	12.6	—	12.6
Income (loss) from continuing operations before income taxes	113.2	122.2	121.7	343.5	(527.8)	172.8
(Benefit) provision for income taxes	(0.9)	—	—	59.6	—	58.7
Net income (loss) from continuing operations	114.1	122.2	121.7	283.9	(527.8)	114.1
Income from discontinued operations, net of tax	—	—	—	371.3	—	371.3
Gain from sale of discontinued operations, net of tax	—	—	—	181.1	—	181.1
Earnings (loss) from discontinued operations of investment in subsidiaries	552.4	552.4	552.4	—	(1,657.2)	—
Net income (loss)	$ 666.5	$ 674.6	$ 674.1	$ 836.3	$ (2,185.0)	$ 666.5
Comprehensive income (loss), net of tax						
Net income (loss)	$ 666.5	$ 674.6	$ 674.1	$ 836.3	$ (2,185.0)	$ 666.5
Changes in cumulative translation adjustment	497.5	497.5	497.5	497.5	(1,492.5)	497.5
Changes in market value of derivative financial instruments, net of tax	(4.6)	(4.6)	(4.6)	(4.6)	13.8	(4.6)
Comprehensive income (loss)	$ 1,159.4	$ 1,167.5	$ 1,167.0	$ 1,329.2	$ (3,663.7)	$ 1,159.4

Pentair plc and Subsidiaries
Condensed Consolidating Statement of Cash Flows
Year Ended December 31, 2017

In millions	Parent Company Guarantor	Subsidiary Guarantor	Subsidiary Issuer	Non-guarantor Subsidiaries	Eliminations	Consolidated Total
Operating activities						
Net cash provided by (used for) operating activities	$ 678.3	$ 676.1	$ 656.2	$ 794.6	$ (2,185.0)	$ 620.2
Investing activities						
Capital expenditures	—	—	—	(39.1)	—	(39.1)
Proceeds from sale of property and equipment	—	—	—	3.7	—	3.7
Proceeds from sale of businesses and other	—	—	2,765.6	(6.2)	—	2,759.4
Acquisitions, net of cash acquired	—	—	—	(45.9)	—	(45.9)
Net intercompany loan activity	—	(58.9)	103.7	172.5	(217.3)	—
Net cash provided by (used for) investing activities of continuing operations	—	(58.9)	2,869.3	85.0	(217.3)	2,678.1
Net cash used for investing activities of discontinued operations	—	—	—	(47.7)	—	(47.7)
Net cash (used for) provided by investing activities	—	(58.9)	2,869.3	37.3	(217.3)	2,630.4
Financing activities						
Net (repayments) receipts of commercial paper and revolving long-term debt	—	—	(914.7)	1.6	—	(913.1)
Repayment of long-term debt	—	—	(1,917.8)	(91.5)	—	(2,009.3)
Premium paid on early extinguishment of debt	—	—	(86.0)	(8.9)	—	(94.9)
Net change in advances to subsidiaries	(263.8)	(617.2)	(680.8)	(840.5)	2,402.3	—
Shares issued to employees, net of shares withheld	37.2	—	—	—	—	37.2
Repurchases of ordinary shares	(200.0)	—	—	—	—	(200.0)
Dividends paid	(251.7)	—	—	—	—	(251.7)
Other	—	—	—	(0.8)	—	(0.8)
Net cash (used for) provided by financing activities	(678.3)	(617.2)	(3,599.3)	(940.1)	2,402.3	(3,432.6)
Change in cash held for sale	—	—	—	(5.4)	—	(5.4)
Effect of exchange rate changes on cash and cash equivalents	—	—	73.8	(17.0)	—	56.8
Change in cash and cash equivalents	—	—	—	(130.6)	—	(130.6)
Cash and cash equivalents, beginning of year	—	—	—	216.9	—	216.9
Cash and cash equivalents, end of year	$ —	$ —	$ —	$ 86.3	$ —	$ 86.3

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

None.

ITEM 9A. CONTROLS AND PROCEDURES

Our management, with the participation of our Chief Executive Officer and our Chief Financial Officer, evaluated the effectiveness of the design and operation of our disclosure controls and procedures as of the end of the year ended December 31, 2019, pursuant to Rule 13a-15(b) of the Securities Exchange Act of 1934 ("the Exchange Act"). Based upon their evaluation, our Chief Executive Officer and our Chief Financial Officer concluded that our disclosure controls and procedures were effective as of the year ended December 31, 2019 to ensure that information required to be disclosed by us in the reports we file or submit under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the Securities and Exchange Commission's rules and forms and to ensure that information required to be disclosed by us in the reports we file or submit under the Exchange Act is accumulated and communicated to our management, including our principal executive and principal financial officers, as appropriate to allow timely decisions regarding required disclosures.

Management's Annual Report on Internal Control Over Financial Reporting
The report of management required under this ITEM 9A is contained in ITEM 8 of this Annual Report on Form 10-K under the caption "Management's Report on Internal Control Over Financial Reporting."

Attestation Report of Independent Registered Public Accounting Firm
The attestation report required under this ITEM 9A is contained in ITEM 8 of this Annual Report on Form 10-K under the caption "Report of Independent Registered Public Accounting Firm."

Changes in Internal Control over Financial Reporting
There was no change in our internal control over financial reporting that occurred during the quarter ended December 31, 2019 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

ITEM 9B. OTHER INFORMATION

None.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

Information required under this item with respect to directors is contained in our Proxy Statement for our 2020 annual general meeting of shareholders under the captions "Corporate Governance Matters" and "Proposal 1 Re-elect Director Nominees" and is incorporated herein by reference.

Information required under this item with respect to executive officers is contained in Part I of this Form 10-K under the caption "Information About Our Executive Officers."

Our Board of Directors has adopted Pentair's Code of Business Conduct and Ethics and designated it as the code of ethics for the Company's Chief Executive Officer and senior financial officers. The Code of Business Conduct and Ethics also applies to all employees and directors in accordance with New York Stock Exchange Listing Standards. We have posted a copy of Pentair's Code of Business Conduct and Ethics on our website at http://pentair.com/en/about-us/leadership/corporate-governance. We intend to satisfy the disclosure requirements under Item 5.05 of Form 8-K regarding amendments to or waivers from, Pentair's Code of Business Conduct and Ethics by posting such information on our website at http://pentair.com/en/about-us/leadership/corporate-governance.

We are not including the information contained on our website as part of, or incorporating it by reference into, this report.

ITEM 11. EXECUTIVE COMPENSATION

Information required under this item is contained in our Proxy Statement for our 2020 annual general meeting of shareholders under the captions "Compensation Discussion and Analysis," "Compensation Committee Report," "Executive Compensation Tables" and "Corporate Governance Matters - Director Compensation" and is incorporated herein by reference.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

Information required under this item with respect to security ownership is contained in our Proxy Statement for our 2020 annual general meeting of shareholders under the caption "Security Ownership" and is incorporated herein by reference.

The following table summarizes, as of December 31, 2019, information about compensation plans under which our equity securities are authorized for issuance:

Plan category	Number of securities to be issued upon exercise of outstanding options, warrants and rights (a)	Weighted-average exercise price of outstanding options, warrants and rights (b)	Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column (a)) (c)
Equity compensation plans approved by security holders:			
2012 Stock and Incentive Plan	4,555,732 (1)	$ 39.78 (2)	3,081,917 (3)
2008 Omnibus Stock Incentive Plan	664,329 (4)	23.69 (2)	— (5)
Total	5,220,061	$ 37.29 (2)	3,081,917

(1) Consists of 3,626,370 shares subject to stock options, 563,051 shares subject to restricted stock units, and 366,311 shares subject to performance share awards.

(2) Represents the weighted average exercise price of outstanding stock options and does not take into account outstanding restricted stock units or performance share units.

(3) Represents securities remaining available for issuance under the 2012 Stock and Incentive Plan.

(4) Consists of 664,329 shares subject to stock options.

(5) The 2008 Omnibus Stock Incentive Plan was terminated in 2012. Stock options previously granted under the 2008 Omnibus Stock Incentive Plan remain outstanding, but no further options or shares may be granted under this plan.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS AND DIRECTOR INDEPENDENCE

Information required under this item is contained in our Proxy Statement for our 2020 annual general meeting of shareholders under the captions "Proposal 1 Re-elect Director Nominees - Director Independence" and "Corporate Governance Matters - The Board's Role and Responsibilities - Policies and Procedures Regarding Related Person Transactions" and is incorporated herein by reference.

ITEM 14. PRINCIPAL ACCOUNTING FEES AND SERVICES

Information required under this item is contained in our Proxy Statement for our 2020 annual general meeting of shareholders under the caption "Proposal 3 Ratify, by Nonbinding, Advisory Vote, the Appointment of Deloitte & Touche LLP as the Independent Auditor of Pentair plc and to Authorize, by Binding Vote, the Audit and Finance Committee of the Board of Directors to Set the Auditor's Remuneration" and is incorporated herein by reference.

PART IV

ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

(a) List of documents filed as part of this report:

(1) Financial Statements

Consolidated Statements of Operations and Comprehensive Income for the years ended December 31, 2019, 2018 and 2017

Consolidated Balance Sheets as of December 31, 2019 and 2018

Consolidated Statements of Cash Flows for the years ended December 31, 2019, 2018 and 2017

Consolidated Statements of Changes in Equity for the years ended December 31, 2019, 2018 and 2017

Notes to Consolidated Financial Statements

(2) Financial Statement Schedule

None.

All other schedules for which provision is made in the applicable accounting regulations of the Securities and Exchange Commission have been omitted because they are not applicable or the required information is shown in the financial statements or notes thereto.

(3) Exhibits

The exhibits of this Annual Report on Form 10-K included herein are set forth below.

Exhibit Number	Exhibit
2.1	Share Purchase Agreement, dated August 18, 2016, by and between Emerson Electric Co. and Pentair plc (Incorporated by reference to Exhibit 2.1 in the Quarterly Report on Form 10-Q of Pentair plc filed with the Commission on October 25, 2016 (File No. 001-11625)).
2.2	Separation and Distribution Agreement, dated as of April 27, 2018, by and between Pentair plc and nVent Electric plc (Incorporated by reference to Exhibit 2.1 to the Current Report on Form 8-K of Pentair plc filed with the Commission on April 30, 2018) (File No. 001-11625)).
2.3	Tax Matters Agreement, dated as of April 27, 2018, by and between Pentair plc and nVent Electric plc (Incorporated by reference to Exhibit 2.2 to the Current Report on Form 8-K of Pentair plc filed with the Commission on April 30, 2018 (File No. 001-11625)).
2.4	Transition Services Agreement, dated as of April 27, 2018, by and between Pentair plc and nVent Electric plc (Incorporated by reference to Exhibit 2.3 to the Current Report on Form 8-K of Pentair plc filed with the Commission on April 30, 2018 (File No. 001-11625)).
2.5	Employee Matters Agreement, dated as of April 27, 2018, by and between Pentair plc and nVent Electric plc (Incorporated by reference to Exhibit 2.4 to the Current Report on Form 8-K of Pentair plc filed with the Commission on April 30, 2018 (File No. 001-11625)).
3.1	Amended and Restated Memorandum and Articles of Association of Pentair plc (Incorporated by reference to Exhibit 3.1 to the Current Report on Form 8-K of Pentair plc filed with the Commission on May 9, 2017 (File No. 001-11625)).
4.1	Indenture, dated as of September 24, 2012, among Pentair Finance S.A. (formerly Tyco Flow Control International Finance S.A.) (as Issuer), Pentair Ltd. (as Guarantor) and Wells Fargo Bank, National Association (as Trustee) (Incorporated by reference to Exhibit 4.1 in the Current Report on Form 8-K of Pentair Ltd. filed with the Commission on September 28, 2012 (File No. 001-11625)).
4.2	Second Supplemental Indenture, dated as of September 24, 2012, among Pentair Finance S.A. (formerly Tyco Flow Control International Finance S.A.) (as Issuer), Pentair Ltd. (as Guarantor), Pentair, Inc. and Wells Fargo Bank, National Association (as Trustee) (Incorporated by reference to Exhibit 4.3 in the Current Report on Form 8-K of Pentair Ltd. filed with the Commission on September 28, 2012 (File No. 001-11625)).

4.3 Fourth Supplemental Indenture, dated as of November 26, 2012, among Pentair Finance S.A. (as Issuer), Pentair Ltd. (as Guarantor) and Wells Fargo Bank, National Association (as Trustee) (Incorporated by reference to Exhibit 4.2 in the Current Report on Form 8-K of Pentair Ltd. filed with the Commission on November 28, 2012 (File No. 001-11625)).

4.4 Fifth Supplemental Indenture, dated as of December 18, 2012, among Pentair Finance S.A. (as Issuer), Pentair Ltd. (as Guarantor) and Wells Fargo Bank, National Association (as Trustee) (Incorporated by reference to Exhibit 4.1 in the Current Report on Form 8-K of Pentair Ltd. filed with the Commission on December 18, 2012 (File No. 001-11625)).

4.5 Sixth Supplemental Indenture, dated as of May 20, 2014, among Pentair Finance S.A., Pentair Ltd., Pentair Investments Switzerland GmbH, Pentair plc and Wells Fargo Bank, National Association, as trustee (Incorporated by reference to Exhibit 4.3 in the Current Report on Form 8-K of Pentair plc filed with the Commission on May 20, 2014 (File No. 001-11625)).

4.6 Seventh Supplemental Indenture, dated as of May 26, 2017, among Pentair Finance S.A., Pentair plc, Pentair Investments Switzerland GmbH and Wells Fargo Bank, National Association as trustee (Incorporated by reference to Exhibit 4.1 to the Current Report on Form 8-K of Pentair plc filed with the Commission on May 31, 2017 (File No. 001-11625)).

4.7 Senior Indenture, dated May 2, 2011 by and among Pentair, Inc. and Wells Fargo Bank, National Association (Incorporated by reference to Exhibit 4.5 to Pentair, Inc.'s Registration Statement on Form S-3 (Registration 333-173829)).

4.8 First Supplemental Indenture, dated as of May 9, 2011, among Pentair, Inc., the guarantors named therein and Wells Fargo Bank, National Association (Incorporated by reference to Exhibit 4.2 in the Current Report on Form 8-K of Pentair, Inc. filed with the Commission on May 9, 2011 (File No. 000-04689)).

4.9 Third Supplemental Indenture, dated October 1, 2012, among Pentair Ltd., Pentair, Inc. and Wells Fargo Bank, National Association, as trustee (Incorporated by reference to Exhibit 4.1 in the Current Report on Form 8-K of Pentair Ltd. filed with the Commission on October 1, 2012 (File No. 001-11625)).

4.10 Fourth Supplemental Indenture, dated as of December 17, 2012, among Pentair, Inc. (as Issuer), Pentair Ltd. (as Guarantor) and Wells Fargo Bank, National Association (as Trustee) (Incorporated by reference to Exhibit 4.2 in the Current Report on Form 8-K of Pentair Ltd. filed with the Commission on December 18, 2012 (File No. 001-11625)).

4.11 Fifth Supplemental Indenture, dated as of May 20, 2014, among Pentair, Inc., Pentair Ltd., Pentair Investments Switzerland GmbH, Pentair plc and Wells Fargo Bank, National Association, as trustee (Incorporated by reference to Exhibit 4.2 in the Current Report on Form 8-K of Pentair plc filed with the Commission on May 20, 2014 (File No. 001-11625)).

4.12 Sixth Supplemental Indenture, dated as of May 26, 2017, among Pentair, Inc., Pentair plc, Pentair Investments Switzerland GmbH and Wells Fargo Bank, National Association, as trustee (Incorporated by reference to Exhibit 4.2 to the Current Report on Form 8-K of Pentair plc filed with the Commission on May 31, 2017 (File No. 001-11625)).

4.13 Credit Agreement, dated as of April 25, 2018, among Pentair plc, Pentair Investments Switzerland GmbH, Pentair Finance S.à r.l., Pentair, Inc. and the lenders and agents party thereto (Incorporated by reference to Exhibit 4.1 to the Current Report on Form 8-K of Pentair plc filed with the Commission on April 30, 2018) (File No. 001-11625)).

4.14 Amendment No. 1, dated as of December 2, 2019, to Credit Agreement, dated as of April 15, 2018, among Pentair plc, Pentair Investments Switzerland GmbH, Pentair Finance S.à r.l., Pentair, Inc. and the lenders and agents party thereto (Incorporated by reference to Exhibit 4.1 to the Current Report on Form 8-K of Pentair plc filed with the Commission on December 6, 2019) (File No. 001-11625)).

4.15 Indenture, dated as of September 16, 2015, among Pentair Finance S.A. (as Issuer), Pentair plc (as Parent and Guarantor), Pentair Investments Switzerland GmbH (as Guarantor) and U.S. Bank National Association (as Trustee) (Incorporated by reference to Exhibit 4.1 to the Current Report on Form 8-K of Pentair plc filed with the Commission on September 16, 2015 (File No. 001-11625)).

4.16 Second Supplemental Indenture, dated as of September 16, 2015, among Pentair Finance S.A. (as Issuer), Pentair plc (as Parent and Guarantor), Pentair Investments Switzerland GmbH (as Guarantor) and U.S. Bank National Association (as Trustee) (Incorporated by reference to Exhibit 4.3 to the Current Report on Form 8-K of Pentair plc filed with the Commission on September 16, 2015 (File No. 001-11625)).

4.17 Third Supplemental Indenture, dated as of September 16, 2015, among Pentair Finance S.A. (as Issuer), Pentair plc (as Parent and Guarantor), Pentair Investments Switzerland GmbH (as Guarantor) and U.S. Bank National Association (as Trustee) (Incorporated by reference to Exhibit 4.4 to the Current Report on Form 8-K of Pentair plc filed with the Commission on September 16, 2015 (File No. 001-11625)).

4.18	Fourth Supplemental Indenture, dated as of September 17, 2015, among Pentair Finance S.A. (as Issuer), Pentair plc (as Parent and Guarantor), Pentair Investments Switzerland GmbH (as Guarantor) and U.S. Bank National Association (as Trustee) (Incorporated by reference to Exhibit 4.2 to the Current Report on Form 8-K of Pentair plc filed with the Commission on September 17, 2015 (File No. 001-11625)).
4.19	Fifth Supplemental Indenture, dated as of May 26, 2017, among Pentair Finance S.A., Pentair plc, Pentair Investments Switzerland GmbH and U.S. Bank National Association, as trustee (Incorporated by reference to Exhibit 4.3 to the Current Report on Form 8-K of Pentair plc filed with the Commission on May 31, 2017 (File No. 001-11625)).
4.20	Sixth Supplemental Indenture, dated as of June 21, 2019, among Pentair Finance S.à r.l. (as Issuer), Pentair plc (as Parent and Guarantor), Pentair Investments Switzerland GmbH (as Guarantor) and U.S. Bank National Association (as Trustee) (Incorporated by reference to Exhibit 4.2 to the Current Report on Form 8-K of Pentair plc filed with the Commission on June 21, 2019 (File No. 001-11625)).
4.21	Description of Securities.
10.1	Tax Sharing Agreement, dated September 28, 2012 by and among Pentair Ltd., Tyco International Ltd. and The ADT Corporation (Incorporated by reference to Exhibit 10.1 in the Current Report on Form 8-K of Pentair Ltd. filed with the Commission on September 28, 2012 (File No. 001-11625)).
10.2	Pentair plc 2012 Stock and Incentive Plan, as amended and restated effective as of January 1, 2017. (Incorporated by reference to Exhibit 10.2 to the Annual Report on Form 10-K of Pentair plc for the year ended December 31, 2016 (File No. 001-11625)).*
10.3	Form of Executive Officer Stock Option Grant Agreement for grants made prior to January 1, 2017 (Incorporated by reference to Exhibit 10.7 in the Current Report on Form 8-K of Pentair plc filed with the Commission on June 3, 2014 (File No. 001-11625)).*
10.4	Form of Executive Officer Restricted Stock Unit Grant Agreement for grants made prior to January 1, 2017 (Incorporated by reference to Exhibit 10.8 in the Current Report on Form 8-K of Pentair plc filed with the Commission on June 3, 2014 (File No. 001-11625)).*
10.5	Form of Non-Employee Director Stock Option Grant Agreement (Incorporated by reference to Exhibit 10.10 in the Current Report on Form 8-K of Pentair plc filed with the Commission on June 3, 2014 (File No. 001-11625)).*
10.6	Form of Non-Employee Director Restricted Stock Unit Grant Agreement (Incorporated by reference to Exhibit 10.11 in the Current Report on Form 8-K of Pentair plc filed with the Commission on June 3, 2014 (File No. 001-11625)).*
10.7	Form of Performance Share Units Grant Agreement for grants made during 2016 (Incorporated by reference to Exhibit 10.8 in the Annual Report on Form 10-K of Pentair plc filed with the Commission on February 26, 2016 (File No. 001-11625)).*
10.8	Pentair plc 2008 Omnibus Stock Incentive Plan, as amended and restated effective as of January 1, 2017 (Incorporated by reference to Exhibit 10.9 to the Annual Report on Form 10-K of Pentair plc for the year ended December 31, 2016 (File No. 001-11625)).*
10.9	Pentair plc Omnibus Stock Incentive Plan, as amended and restated (Incorporated by reference to Exhibit 10.3 in the Current Report on Form 8-K of Pentair plc filed with the Commission on June 3, 2014 (File No. 001-11625)).*
10.10	Pentair plc Outside Directors Nonqualified Stock Option Plan, as amended and restated (Incorporated by reference to Exhibit 10.4 in the Current Report on Form 8-K of Pentair plc filed with the Commission on June 3, 2014 (File No. 001-11625)).*
10.11	Form of Assignment and Assumption Agreement, among Pentair, Inc., Pentair Ltd. and the executive officers of Pentair Ltd. relating to Key Executive Employment and Severance Agreement (Incorporated by reference to Exhibit 10.12 in the Current Report on Form 8-K of Pentair Ltd. filed with the Commission on October 1, 2012 (File No. 001-11625)).*
10.12	Form of Key Executive Employment and Severance Agreement for John L. Stauch and Mark C. Borin (Incorporated by reference to Exhibit 10.1 in the Quarterly Report on Form 10-Q of Pentair plc for the quarter ended June 30, 2018 (File No. 001-11625)).*
10.13	Form of Key Executive Employment and Severance Agreement for Karl R. Frykman and John H. Jacko (Incorporated by reference to Exhibit 10.2 in the Quarterly Report on Form 10-Q of Pentair plc for the quarter ended June 30, 2018 (File No. 001-11625)).*
10.14	Form of Key Executive Employment and Severance Agreement for Karla C. Robertson, Kelly A. Baker, Philip M. Rolchigo and James P. Wamsley (Incorporated by reference to Exhibit 10.3 in the Quarterly Report on Form 10-Q of Pentair plc for the quarter ended June 30, 2018 (File No. 001-11625)).*

10.15 Pentair plc Compensation Plan for Non-Employee Directors, as amended and restated (Incorporated by reference to Exhibit 10.6 in the Current Report on Form 8-K of Pentair plc filed with the Commission on June 3, 2014 (File No. 001-11625)).*

10.16 Pentair plc Employee Stock Purchase and Bonus Plan, as amended and restated (Incorporated by reference to Exhibit 10.16 to the Annual Report on Form 10-K of Pentair plc for the year ended December 31, 2019 (File No. 001-11625)).*

10.17 Pentair, Inc. Non-Qualified Deferred Compensation Plan, as amended and restated (Incorporated by reference to Exhibit 10.17 to the Annual Report on Form 10-K of Pentair plc for the year ended December 31, 2019 (File No. 001-11625)).*

10.18 Trust Agreement for Pentair, Inc. Non-Qualified Deferred Compensation Plan between Pentair, Inc. and Fidelity Management Trust Company (Incorporated by reference to Exhibit 10.18 contained in the Annual Report on Form 10-K of Pentair, Inc. for the year ended December 31, 1995 (File No. 000-04689)).*

10.19 Pentair, Inc. 1999 Supplemental Executive Retirement Plan as Amended and Restated effective August 23, 2000 (Incorporated by reference to Exhibit 10.2 in the Current Report on Form 8-K of Pentair, Inc. filed with the Commission on September 21, 2000 (File No. 000-04689)).*

10.20 Pentair, Inc. Supplemental Executive Retirement Plan effective January 1, 2009, as amended and restated (Incorporated by reference to Exhibit 10.13 in the Current Report on Form 8-K of Pentair plc filed with the Commission on June 3, 2014 (File No. 001-11625)).*

10.21 Pentair, Inc. Restoration Plan as Amended and Restated effective August 23, 2000 (Incorporated by reference to Exhibit 10.3 in the Current Report on Form 8-K of Pentair, Inc. filed with the Commission on September 21, 2000 (File No. 000-04689)).*

10.22 Pentair, Inc. Restoration Plan effective January 1, 2009, as amended and restated (Incorporated by reference to Exhibit 10.14 in the Current Report on Form 8-K of Pentair plc filed with the Commission on June 3, 2014 (File No. 001-11625)).*

10.23 Form of Deed of Indemnification for directors and executive officers of Pentair plc (Incorporated by reference to Exhibit 10.15 in the Current Report on Form 8-K of Pentair plc filed with the Commission on June 3, 2014 (File No. 001-11625)).*

10.24 Form of Indemnification Agreement for directors and executive officers of Pentair plc (Incorporated by reference to Exhibit 10.16 in the Current Report on Form 8-K of Pentair plc filed with the Commission on June 3, 2014 (File No. 001-11625)).*

10.25 Form of Executive Officer Key Talent Award Agreement (Incorporated by reference to Exhibit 10.2 to the Quarterly Report on Form 10-Q of Pentair plc for the quarter ended March 31, 2018 (File No. 001-11625)).*

10.26 Form of Executive Officer Stock Option Grant Agreement for grants made on or after January 1, 2017 and prior to February 26, 2018 (Incorporated by reference to Exhibit 10.31 to the Annual Report on Form 10-K of Pentair plc for the year ended December 31, 2016 (File No. 001-11625)).*

10.27 Form of Executive Officer Restricted Stock Unit Grant Agreement for grants made on or after January 2, 2017 and prior to February 26, 2018 (Incorporated by reference to Exhibit 10.32 to the Annual Report on Form 10-K of Pentair plc for the year ended December 31, 2016 (File No. 001-11625)).*

10.28 Form of Executive Officer Performance Unit Grant Agreement for grants made on or after January 1, 2017 and prior to February 26, 2018 (Incorporated by reference to Exhibit 10.33 to the Annual Report on Form 10-K of Pentair plc for the year ended December 31, 2016 (File No. 001-11625)).*

10.29 Form of Executive Officer Restricted Stock Unit Award Agreement for grants made on or after February 26, 2018 (Incorporated by reference to Exhibit 10.3 to the Quarterly Report on Form 10-Q of Pentair plc for the quarter ended March 31, 2018 (File No. 001-11625)).*

10.30 Form of Executive Officer Stock Option Award Agreement for grants made on or after February 26, 2018 (Incorporated by reference to Exhibit 10.4 to the Quarterly Report on Form 10-Q of Pentair plc for the quarter ended March 31, 2018 (File No. 001-11625)).*

10.31 Form of Executive Officer Performance Stock Unit Award Agreement for grants made on or after February 26, 2018 and prior to January 1, 2019 (Incorporated by reference to Exhibit 10.5 to the Quarterly Report on Form 10-Q of Pentair plc for the quarter ended March 31, 2018 (File No. 001-11625)).*

10.32 Form of Executive Officer Performance Stock Unit Award Agreement for grants made on or after January 1, 2019 (Incorporated by reference to Exhibit 10.32 to the Annual Report on Form 10-K of Pentair plc for the year ended December 31, 2019 (File No. 001-11625)).*

21 List of Pentair plc subsidiaries.

23 Consent of Independent Registered Public Accounting Firm — Deloitte & Touche LLP.

24 Power of attorney.

31.1 Certification of Chief Executive Officer.

31.2 Certification of Chief Financial Officer.

32.1 Certification of Chief Executive Officer, Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.

32.2 Certification of Chief Financial Officer, Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.

101 The following materials from Pentair plc's Annual Report on Form 10-K for the year ended December 31, 2019 are filed herewith, formatted in iXBRL (Inline Extensible Business Reporting Language): (i) the Consolidated Statements of Operations and Comprehensive Income for the years ended December 31, 2019, 2018 and 2017, (ii) the Consolidated Balance Sheets as of December 31, 2019 and 2018, (iii) the Consolidated Statements of Cash Flows for the years ended December 31, 2019, 2018 and 2017, (iv) the Consolidated Statements of Changes in Equity for the years ended December 31, 2019, 2018 and 2017 and (v) the Notes to the Consolidated Financial Statements. The instance document does not appear in the interactive data file because its XBRL tags are embedded within the Inline XBRL document.

104 Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101).

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* Denotes a management contract or compensatory plan or arrangement.

ITEM 16. FORM 10-K SUMMARY

None.

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, on February 25, 2020.

PENTAIR PLC

By /s/ Mark C. Borin

Mark C. Borin

Executive Vice President, Chief Financial Officer and Chief Accounting Officer

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the Registrant and in the capacities indicated, on February 25, 2020.

Signature	Title
/s/ John L. Stauch John L. Stauch	President and Chief Executive Officer, Director
/s/ Mark C. Borin Mark C. Borin	Executive Vice President, Chief Financial Officer and Chief Accounting Officer
* Mona Abutaleb Stephenson	Director
* Glynis A. Bryan	Director
* Jacques Esculier	Director
* T. Michael Glenn	Director
* Theodore L. Harris	Director
* David A. Jones	Director
* Michael T. Speetzen	Director
* Billie I. Williamson	Director

*By /s/ Karla C. Robertson

Karla C. Robertson
Attorney-in-fact

ANNUAL GENERAL MEETING

Our Annual General Meeting of Shareholders will be held at Claridge's, Brook Street, Mayfair, London, W1K4HR, United Kingdom, Tuesday, May 5, 2020 at 8:00 a.m. local time. Shareholders in Ireland may participate in the Annual General Meeting of Shareholders by audio link at the offices of Arthur Cox,Ten Earlsfort Terrace, Dublin 2, D02 T380, Ireland, at 8:00 a.m. local time.

INVESTOR INFORMATION

Shareholders seeking more information about the Company can access news releases describing significant company events and earnings results for each quarter and the fiscal year as well as Form 10-K and other Securities and Exchange Commission filings at www.pentair.com. Information may also be obtained by request from the Pentair Investor Relations Department, 5500 Wayzata Boulevard, Suite 900, Minneapolis, Minnesota 55416

STOCK EXCHANGE LISTING

New York Stock Exchange (symbol: PNR)

REGISTRAR, STOCK TRANSFER AND PAYING AGENT

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CAUTION CONCERNING FORWARD-LOOKING STATEMENTS

This communication contains statements that we believe to be "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995. All statements, other than statements of historical fact, are forward-looking statements. Without limitation, any statements preceded or followed by or that include the words "targets," "plans," "believes," "expects," "intends," "will," "likely," "may," "anticipates," "estimates," "projects," "should," "would," "positioned," "strategy," "future" or words, phrases or terms of similar substance or the negative thereof, are forward-looking statements. These forward-looking statements are not guarantees of future performance and are subject to risks, uncertainties, assumptions and other factors, some of which are beyond our control, which could cause actual results to differ materially from those expressed or implied by such forward-looking statements. These factors include overall global economic and business conditions impacting our business, including the strength of housing and related markets; demand, competition and pricing pressures in the markets we serve; volatility in currency exchange rates; failure of markets to accept new product introductions and enhancements; the ability to successfully identify, finance, complete and integrate acquisitions; the ability to successfully integrate the Aquion and Pelican Water Systems acquisitions; the ability to achieve the benefits of our restructuring plans and cost reduction initiatives; risks associated with operating foreign businesses; the impact of material cost and other inflation; the impact of seasonality of sales and weather conditions; our ability to comply with laws and regulations; the impact of changes in laws, regulations and administrative policy, including those that limit U.S. tax benefits or impact trade agreements and tariffs; the outcome of litigation and governmental proceedings; the potential negative impact of the coronavirus (COVID-19) outbreak on our business; and the ability to achieve our long-term strategic operating goals. Additional information concerning these and other factors is contained in our filings with the U.S. Securities and Exchange Commission, including our Annual Report on Form 10-K for the year ended December 31, 2019. All forward-looking statements speak only as of the date of this communication. Pentair plc assumes no obligation, and disclaims any obligation, to update the information contained in this communication.

PENTAIR

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