Annual Report 2021

Advancing What's Possible Through the Relentless Pursuit of Next.

BARNES™

Our New Brand

Pioneering technologies that help change the world.

Welcome to Barnes. The evolution of our Company is rooted in our 165 heritage, our technology capabilities and innovations, and most importantly, our people. Our refreshed corporate brand represents what we stand for as a Company and captures our ongoing transformation and evolution as a global diversified business. Our new logo - which we call the "continuum" - represents the cross pollination between our businesses, customers, shareholders, and communities. It promotes forward thinking and signifies a promise of Persistent Ingenuity™ that is at the very heart of our organization. The new brand identity reflects that each of you is part of the future of this enterprise. Therefore, it is only fitting that our "One Team, One Company" culture will continue to be an essential driver in uniting us globally.

BARNES™

Businesses at a Glance

Barnes

Barnes Group Inc. (NYSE: B) pioneers technologies to help change the world. Employees across the globe are dedicated to Persistent Ingenuity – advancing what's possible and delivering to the highest standards. We serve a wide range of end markets and customers, including healthcare, automation, packaging, aerospace, mobility, and manufacturing, delivering breakthrough products and services to shape a more inclusive and sustainable world.

One Team,
One Company,
One Barnes.

Molding Solutions

Molding Solutions' comprehensive portfolio of advanced plastic injection molding technologies and value-added services delivers premium tool-based solutions to global customers in the medical, personal care, packaging, general industrial, and transportation markets.

Force & Motion Control

Force & Motion Control is a leader in the development of nitrogen gas springs, gas-hydraulic suspension, customized gas springs, spring elements, and precision custom struts providing innovative force and motion control solutions to customers in a wide range of metal forming and other industrial markets.

Automation

Automation designs and develops robotic grippers, advanced end-of-arm tooling systems, sensors and other automation components for intelligent robotic handling solutions and industrial automation applications in end markets such as packaging, healthcare, transportation, & food and beverage.

Engineered Components

Engineered Components provides a comprehensive range of manufacturing capabilities including precision micro-stamped/ fine-blanked solutions, high performance precision components, retaining and snap rings, and assemblies for industrial applications in end markets such as transportation, white goods, construction, and medical.

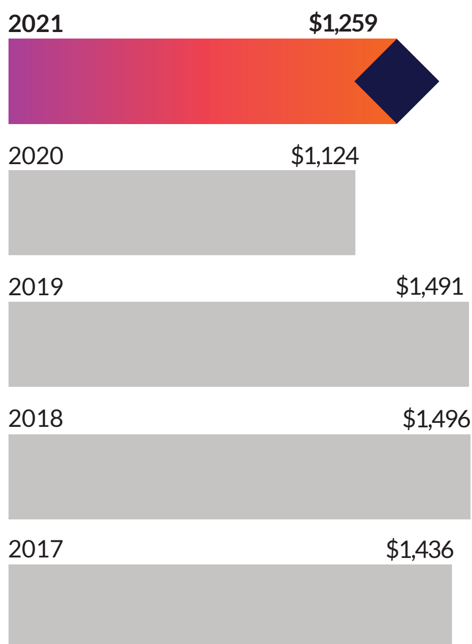
Aerospace

Barnes Aerospace provides superior engineering solutions, comprehensive component manufacturing, overhaul and repair services, and spare parts to the world's major engine and aircraft manufacturers, nacelle providers, commercial airlines, and the military.

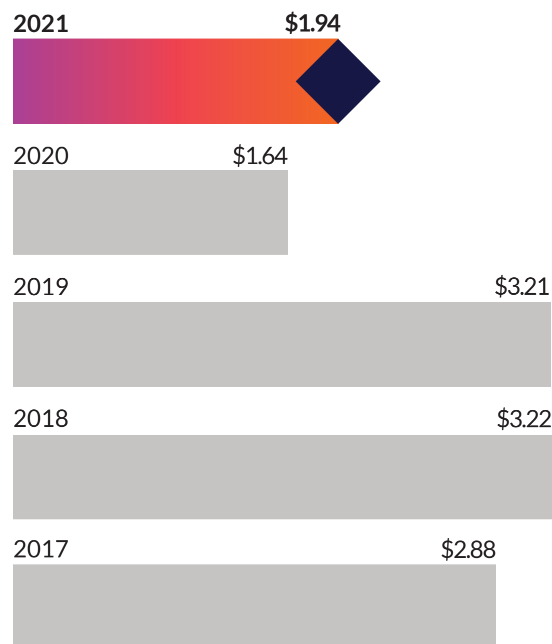
2021 Financial Highlights

Net Sales

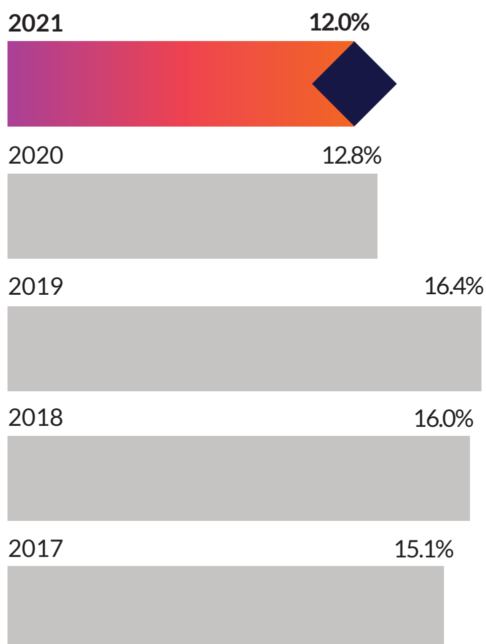
($ in Millions)



Adjusted EPS[1]

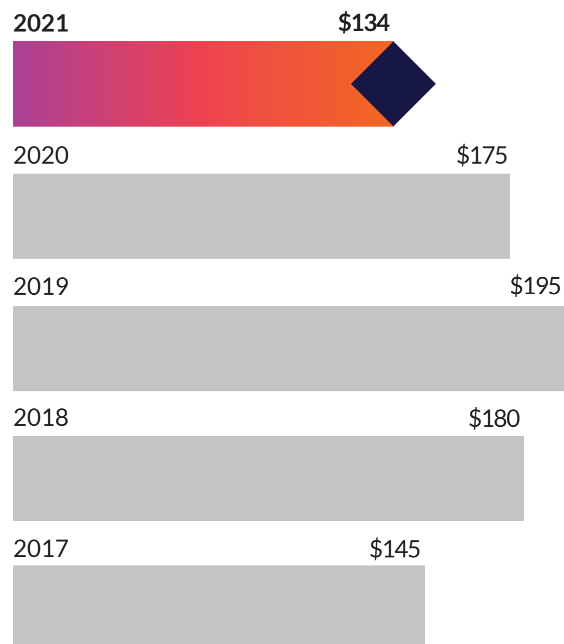


Adjusted Operating Margins[1, 2]



Adjusted Free Cash Flow [1]

($ in Millions)



Adjusted Cash Conversion

2021	2020	2019	2018	2017
134%	249%	119%	110%	93%

(1) References to adjusted results are non-GAAP measures. For a reconciliation to the appropriate GAAP measure, see the GAAP reconciliation on pages 11 & 12.
(2) Operating margin results have been adjusted on a retrospective basis to reflect the impact of the adoption of revised guidance for the presentation of pension and other post retirement benefit costs in the first quarter of 2018.

Total Revenue

Industrial
71% - $896m

Aerospace
29% - $362m

Molding Solutions
36% - $459m

Force & Motion Control
15% - $186m

Engineered Components
15% - $184m

Automation
5% - $68m

Aerospace OEM
20% - $247m

Aerospace Aftermarket
9% - $116m

End Markets

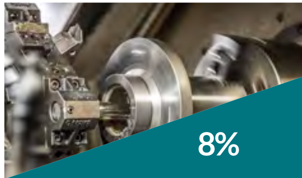
General Industrial

Medical, Personal Care & Packaging

Auto Molding Solutions

Auto Production

Tool & Die



Automation

Aerospace OEM

Aerospace Aftermarket

Geographic Region

Americas

50%

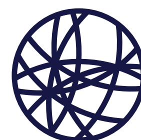
Europe

31%

Asia

18%

Rest of World



1%

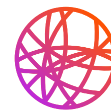
Letter to Shareholders,

To Our Stakeholders

2021 was a remarkable year of recovery, evolution, and accomplishment for Barnes. As we began to emerge from the impacts of the global pandemic, we focused our efforts on re-engaging our growth engine, which delivered strong orders growth and increased sales in both our Industrial and Aerospace businesses. We embarked on a strategic marketing initiative to evolve our corporate brand, including refreshed positioning, refined Company Values, and establishing a modern identity that better aligns with our transformation goals and strategic growth aspirations. We also made advancements in several key initiatives such as strategic marketing, innovation, digitalization, Environment, Social, and Governance ("ESG"), and talent management to best position Barnes for future success.

The resilience of the Barnes team in addressing significant economic challenges in 2021 – from the global pandemic to supply chain pressures to heightened inflation – is reflected in the solid results achieved. We truly appreciate the hard work and dedication of our 5,100 employees across the globe who have made our success possible.

The Power of Barnes



BARNES™

Barnes is a company on the move. Our new corporate brand reflects the significant transformation occurring across the organization, embodying our employees' renewed sense of purpose, energy, and enthusiasm. It marks a further milestone in our evolution as we continue to reinvent the Company with a fresh and forward-looking approach to the market. Barnes is focused on becoming a global technology-driven company with a clear goal of looking to advance what's possible. We embrace change, invest in innovation, and seek out new challenges. Our new logo – which we call the "continuum" – represents the cross-pollination between our businesses, employees, customers, shareholders, and communities. It promotes forward-thinking and signifies a promise of Persistent Ingenuity that is at the very heart of our organization. The new brand identity reflects that each of our employees is an integral part of the future of Barnes, which is only fitting for our "One Team, One Company" culture.

Our new brand identity came at an inflection point for the organization as we leverage the Barnes Enterprise System to adopt next-generation technology and expand globally. The New Barnes brand is oriented towards the future and our aspirations of becoming a technology solutions provider. It is rooted in the Company's heritage and people – the drivers that have made Barnes what it is today. Creating a unique and influential parent brand in the marketplace was fundamental for establishing the groundwork for our continued success at every level.

Profitable Growth Strategy

As Barnes delivers on its purpose, “To advance what’s possible through the relentless pursuit of next,” we have evolved our strategy to generate sustained profitable growth. This foundational approach to the way we do business can be synthesized into four pillars.

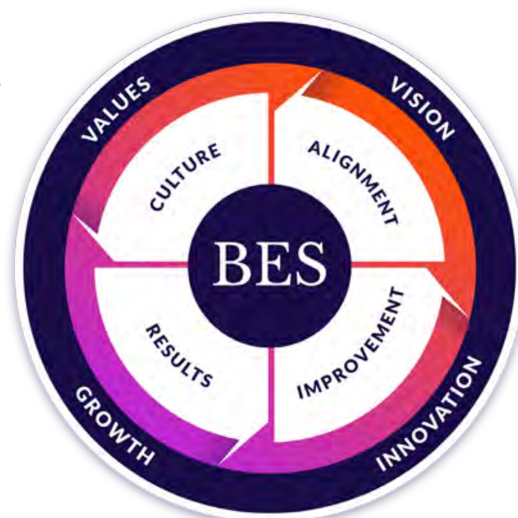
[1] Total Shareholder Return, top quartile within the Russell 2000 Index.

The first pillar reflects building a world-class company focused on high-margin, high-growth businesses. This involves constructing a portfolio of closely aligned companies that can leverage a common set of attributes and markets with long-term growth prospects, fostering a customer-centric culture, building out scalable best-in-class business processes, and expanding our global reach.

The second pillar speaks to fully leverage the Barnes Enterprise System (“BES”), our most effective value creation driver. BES begins with the belief that if you win the hearts and minds of employees, they in turn will create a winning culture and drive alignment across the organization through a shared vision and purpose. Within this framework, we capture all the key initiatives that will drive our growth – strategic marketing, digitalization, innovation, ESG, and talent management. BES develops best-in-class business and operating systems that ultimately generate results. It allows us to sell, deliver, and realize our value by consistently performing and meeting our commitments using the key processes of Commercial, Operational, and Financial Excellence.

Our third pillar addresses expanding and protecting our intellectual property, which we consider a core differentiator. We have made significant investments in innovation and technology over the past few years. Building intelligence into everything we do and make is at the heart of our innovation. At the core of that intelligence is digitalization, which we see as a growth accelerator – whether enhancing our customers’ experience with our products and services or driving business excellence within Barnes.

The fourth pillar of our growth strategy discusses creating value for all our stakeholders. This means being good stewards of capital and employing it wisely to drive consistent profitable growth for our shareholders. It involves providing our customers with high-performance, value-added products and services to help make them successful. It offers Barnes employees with opportunities to grow, learn, and prosper. Finally, it represents being a responsible corporate citizen by respecting, engaging, and giving back to our communities.



Collectively, the pillars of our growth strategy provide the structure to make Barnes even stronger.

Growth Investments Position us for the Future

In 2021, we made significant investments to position Barnes for future success. We embarked on a strategic marketing initiative to evolve our Corporate brand, including refreshed positioning, refined Barnes Values, and establishing a modern identity that better aligns with our transformation goals and strategic growth aspirations.

The Barnes Values

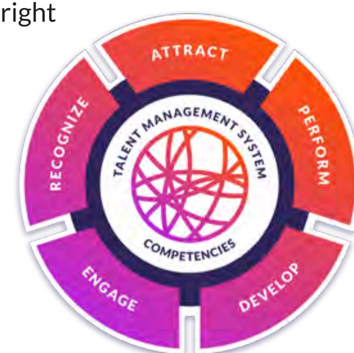
"It's Not Just What We Do, It's How We Do It"

Integrity • Respect • Collaboration • Empowerment • Determination

We intensified our focus on digitalization by integrating our digital initiatives as an essential component within our Barnes Enterprise System, seeking consistent, scalable solutions that drive value for Barnes and our customers. Our Aerospace business further advanced its smart factory efforts by introducing connected machines and dashboards to track data from our production processes, which will help our operations teams improve quality, safety, delivery, and cost. Simultaneously, our Industrial Segment leveraged digital tools to enhance our customers' engagement and experience, making advancements in the development of smart products, digital lead generation, and eCommerce.

In our quest to deliver Persistent Ingenuity, our multi-faceted innovation efforts are bringing new products to market. Examples include the vacuum product line Automation commercialized this year and Molding Solutions' introduction of advanced solutions for medical products like pipettes. We are driving continued development of Molding Solutions' integrated technologies to provide a common platform and suite of capabilities to deliver state-of-the-art process solutions to enhance productivity and improve the user experience. Consistent with our relentless pursuit of next, our product roadmaps are focused on accelerating the development of technology and equipment to ultimately enable our customers to manufacture products using recycled and biofriendly polymers.

Our Talent Management System embodies having the right talent, with the right skills, for the right positions, at the right time, cost, and place. It promotes employee development, engagement, and empowerment and accelerates organizational change and effectiveness to drive business growth and performance. In 2021, we welcomed the first group of talent to our BarnesWORX™ Community. The BarnesWORX Community offers a unique and creative employer/employee working arrangement – similar to a freelance engagement – allowing us to leverage various unique and in-demand skills and competencies to collaborate on important initiatives that support the short and long-term success of the Company. This program provides Barnes with access to a wide and diverse pool of talented individuals who prefer flexible and primarily virtual work arrangements, helping us address our business's evolving needs.

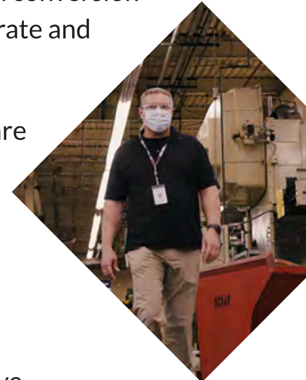


In addition to our organic investments, we continue to seek acquisitions to further transform our business portfolio. In doing so, we identified that the most significant opportunities to drive growth and build scale lie within two strategic priorities: Automation and Molding Solutions. While these businesses are different in terms of technologies and market drivers, they share a common vision around integrated technology portfolios that can be combined into turnkey solutions in attractive growth markets.

Financial Performance and Capital Deployment

For 2021, we demonstrated solid recovery in our financial performance. Sales of $1.3 billion grew 12% from 2020, with organic sales increasing by 11%, but not yet back to pre-pandemic levels, primarily driven by the protracted recovery in the Aerospace markets and the headwinds several of our industrial businesses faced in the form of supply chain, inflation, and semiconductor challenges. Adjusted operating income was $151 million, up 5%, while adjusted operating margin decreased by 80 bps to 12.0%. Margins were impacted by significant investments in our growth initiatives: strategic marketing, digitalization, and innovation. Adjusted earnings per share of $1.94 were up 18% from 2020.

Cash generation and conversion were strong. Cash provided by operating activities was $168 million, while free cash flow, which we define as cash provided by operating activities less capital expenditures, was $134 million. Cash conversion of 134% exceeded pre-pandemic levels and offers insight into the Company's ability to consistently generate and effectively manage cash.



In 2021, we returned approximately $38 million of capital to our shareholders through dividends and share repurchases. Dividends were the most significant portion of this return of capital, and they remain an essential element of our capital deployment priorities. Barnes has maintained its dividend level over the last two years despite significant pandemic headwinds.

Corporate Citizenship at Barnes

At Barnes, we take our responsibility of being a model corporate citizen very seriously. In doing so, we have maintained a longstanding commitment to be a more sustainable, socially responsible, diverse, and inclusive company. Our ongoing efforts and progress in furthering ESG initiatives consistent with the Barnes Values are documented in our annual ESG Report. The milestones and accomplishments described in this report are the results of our dedicated employees across the globe who embrace our Values each and every day.

Barnes is driving towards our 2025 targets to reduce the energy we use in our factories – as measured in carbon dioxide equivalents (CO_2e) – by 15%, reduce the amount of water we use by 20%, and reduce the amount of industrial process waste we generate from our manufacturing operations by 15%. Energizing our employees to reduce all types of waste and inefficiency to achieve Operational Excellence is a hallmark of BES and demonstrates our commitment to running sustainable businesses that conserve natural resources while minimizing the impact of our footprint on the environment.

In 2021, to better understand the climate-related risks and opportunities across our Company, we conducted our first climate scenario analysis and included a Task Force on Climate-related Financial Disclosures (TCFD) index within our 2021 ESG report. We continue to look at long-term climate risks and opportunities and work to identify additional ways to conserve water, increase energy efficiency, and reduce waste as part of our pursuit of Operational Excellence.

At Barnes, we promote and embrace a diverse and inclusive workplace where everyone is treated with dignity and respect; where all employees are supported, encouraged, and empowered to engage, contribute, and achieve their fullest potential in a safe and rewarding environment. We are committed to cultivating a workplace that prioritizes the development of all our employees and values the diversity and inclusion of every individual.

For Barnes, being a good corporate citizen begins with being a great community leader, which is why we encourage philanthropy, compassion, and change through our Barnes Group Foundation. Founded in 1945 and funded by the Company, the Barnes Group Foundation is committed to supporting education, the arts, civic and youth activities, and health-related charities in the communities in which the Company operates. Since 2000, the Foundation has supported more than 500 schools, cultural centers, and health-related charities, helping to ensure a legacy of community involvement for the future. We contribute over $1 million a year to organizations within our communities through the Foundation.

The Road Ahead

As we exit 2021, we are encouraged by the ongoing recovery in several of our end markets, though we remain mindful of economic and political challenges. As we look ahead to 2022, we are committed to investing in strategic marketing, digitalization, innovation, and talent management to accelerate our transformation, drive productivity, and engage our workforce. These investments will strengthen our global competitiveness and allow Barnes to deliver exceptional value to our customers through our intellectual property-based capabilities and innovative solutions.

Our future offers much promise in the many opportunities before us. We are confident that our strategy will produce long-term profitable growth, and that the talented and dedicated team at Barnes will continue to deliver results in a manner consistent with our Values.

One Team, One Company.

On behalf of our Board of Directors and 5,100 employees across the globe, we extend our sincere appreciation to our customers, suppliers, shareholders, and the communities in which we operate for their continued confidence and trust in Barnes.

Thomas O. Barnes
Chairman of the Board

Patrick J. Dempsey
President and Chief Executive Officer

References to adjusted results are non-GAAP measures. For a reconciliation to the appropriate GAAP measure, see the GAAP reconciliation on pages 11 and 12. The statements in this letter to shareholders are subject to the limitations, conditions, and disclaimers set forth in the forward-looking statement section in the attached annual report filed on Form 10-K filed with the Securities and Exchange Commission.

Barnes Group Inc.
Non-GAAP Financial Measure Reconciliation
(Dollars in thousands, except per share data)
(Unaudited)

	Twelve Months Ended December 31,				
	2021	2020	2019	2018	2017
CONSOLIDATED RESULTS					
Operating Income (GAAP)	$150,018	$123,370	$236,448	$231,764	$206,451
Seeger divestiture adjustments	-	2,466	-	-	-
Seeger divestiture non-cash impairment charge	-	-	5,600	-	-
FOBOHA short-term purchase accounting adjustments	-	-	-	-	2,294
IGS short-term purchase accounting adjustments	-	-	-	2,887	-
Gimatic short-term purchase accounting adjustments	-	-	2,060	2,707	-
Acquisition transaction costs	-	-	-	2,350	-
Restructuring/reduction in force	967	18,158	-	-	7,460
Operating Income as adjusted (Non-GAAP)[1]	$150,985	$143,994	$244,108	$239,708	$216,205
Operating Margin (GAAP)	11.9%	11.0%	15.9%	15.5%	14.4%
Operating Margin as adjusted (Non-GAAP)[1]	12.0%	12.8%	16.4%	16.0%	15.1%
Diluted Net Income per Share (GAAP)	$1.96	$1.24	$3.07	$3.15	$1.09
Seeger divestiture adjustments	-	0.13	-	-	-
Seeger divestiture non-cash impairment charge	-	-	0.11	-	-
FOBOHA short-term purchase accounting adjustments	-	-	-	-	0.03
IGS short-term purchase accounting adjustments	-	-	-	0.04	-
Gimatic short-term purchase accounting adjustments	-	-	0.03	0.04	-
Acquisition transaction costs	-	-	-	0.04	-
Foreign Tax Matters	(0.04)	-	-	-	-
Restructuring/reduction in force	0.02	0.27	-	-	(0.01)
Effects of U.S. tax reform	-	-	-	(0.05)	1.77
Diluted Net Income per Share as adjusted (Non-GAAP)[1]	$1.94	$1.64	$3.21	$3.22	$2.88

NOTES:

Results have been adjusted on a retrospective basis to reflect the impact of the adoption of revised guidance for the presentation of pension and other post retirement benefit costs in the first quarter of 2018, as presented within the Financial Supplement within the form 8-k dated April 27, 2018.

[1] The Company has excluded the following from its historical “as adjusted” financial measurements:

2021: 1) The impact of certain foreign tax matters including a benefit related to the Italy tax realignment, partially offset by a charge related to the UK tax rate and 2) charges related to restructuring actions at certain businesses.

2020: 1) Adjustments related to the divestiture of the Seeger business, including $2.5M reflected within the Industrial segment’s operating profit and $4.2M of tax expense and 2) charges taken in 2020 related to restructuring and workforce reduction actions implemented across its businesses, including $18.2M reflected within operating profit and $1.0M reflected within other expense (income), net.

2019: 1) Short-term purchase accounting adjustments related to its Gimatic acquisition and 2) the non-cash impairment charge related to the divestiture of the Seeger business.

2018: 1) $2,613 of adjustments made in 2018 to reduce the tax expense recorded in December 2017 related to the U.S. tax reform (commonly referred to as the Tax Cuts and Jobs Act), 2) short-term purchase accounting adjustments related to its Industrial Gas Springs (IGS) and Gimatic acquisitions and 3) transaction costs related to the IGS and Gimatic acquisitions.

2017: 1) The effects of U.S. tax reform ($96,700), 2) short-term purchase accounting adjustments related to its FOBOHA acquisition, 3) charges from restructuring actions related to the closure and consolidation of two manufacturing facilities within the Industrial segment and 4) the related pension curtailment and settlement gains included in non-operating income.

The tax effects of these items, excluding 1) the effects of U.S. Tax Reform in 2017 which impacted tax expense directly and 2) the non-cash impairment charge which was recorded pre-tax in 2019, were calculated based on the respective tax jurisdiction of each item. Management believes that these adjustments provide the Company and its investors with an indication of our baseline performance excluding items that are not considered to be reflective of our ongoing results. Management does not intend results excluding the adjustments to represent results as defined by GAAP, and the reader should not consider them as an alternative measurement calculated in accordance with GAAP, or as an indicator of the Company’s performance. Accordingly, the measurements have limitations depending on their use.

Barnes Group Inc.
Non-GAAP Financial Measure Reconciliation
(Dollars in thousands)
(Unaudited)

	Twelve Months Ended December 31,				
	2021	**2020**	**2019**	**2018**	**2017**
FREE CASH FLOW (FCF):					
Net cash provided by operating activities	$167,806	$215,462	$248,301	$237,199	$203,920
Capital expenditures	(34,117)	(40,698)	(53,286)	(57,273)	(58,712)
Free cash flow[1]	$133,689	$174,764	$195,015	$179,926	$145,208
Free cash flow to net income cash conversion ratio (as adjusted):					
Net income	99,873	63,375	158,350	166,186	59,415
Seeger divestiture charges	-	6,677	-	-	-
Non-cash impairment charge related to divestiture	-	-	5,600	-	-
Effects of U.S. tax reform	-	-	-	(2,613)	96,700
Net income (as adjusted)[2]	$99,873	$70,052	$163,950	$163,573	$156,115
Free cash flow to net income cash conversion ratio (as adjusted)[2]	134%	249%	119%	110%	93%

NOTES:

[1] The Company defines free cash flow as net cash provided by operating activities less capital expenditures. The Company believes that the free cash flow metric is useful to investors and management as a measure of cash generated by business operations that can be used to invest in future growth, pay dividends, repurchase stock and reduce debt. This metric can also be used to evaluate the Company's ability to generate cash flow from business operations and the impact that this cash flow has on the Company's liquidity.

[2] For the purpose of calculating the cash conversion ratio, the Company has excluded the following:

2020: The Seeger divestiture charges from net income.

2019: The non-cash impairment charge related to the divestiture of the Seeger business from net income.

2018 & 2017: The effects of U.S. tax reform, commonly referred to as the Tax Cuts and Jobs Act, from net income.

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, 2021

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

For the transition period from to

Commission file number 1-4801

BARNES GROUP INC.

(Exact name of registrant as specified in its charter)

Delaware		**06-0247840**
(State of incorporation)		**(I.R.S. Employer Identification No.)**
123 Main Street	BARNES	
Bristol		
Connecticut		**06010**
(Address of Principal Executive Office)		**(Zip Code)**

(860) 583-7070

Registrant's telephone number, including area code

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

Title of Each Class	Trading Symbol	Name of Each Exchange on Which Registered
Common Stock, par value $0.01 per share	B	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 (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

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

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

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

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

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

The aggregate market value of the voting stock (Common Stock) held by non-affiliates of the registrant as of the close of business on June 30, 2021 was approximately $2,421,981,805 based on the closing price of the Common Stock on the New York Stock Exchange on that date. The registrant does not have any non-voting common equity.

The registrant had outstanding 50,692,397 shares of common stock as of February 16, 2022.

Documents Incorporated by Reference

Portions of the registrant's definitive proxy statement to be delivered to stockholders in connection with the Annual Meeting of Stockholders to be held on May 6, 2022 are incorporated by reference into Part III.

Barnes Group Inc.
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Year Ended December 31, 2021

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FORWARD-LOOKING STATEMENTS

This Annual Report may contain forward-looking statements as defined in the Private Securities Litigation Reform Act of 1995. Forward-looking statements often address our expected future operating and financial performance and financial condition, and often contain words such as "anticipate," "believe," "expect," "plan," "estimate," "project," "continue," "will," "should," "may," and similar terms. These forward-looking statements do not constitute guarantees of future performance and are subject to a variety of risks and uncertainties that may cause actual results to differ materially from those expressed in the forward-looking statements. These include, among others: the Company’s ability to manage economic, business and geopolitical conditions, including global price inflation and shortages impacting the availability of materials; the duration and severity of the COVID-19 pandemic, including its impacts across our business on demand, supply chains, operations and liquidity; failure to successfully negotiate collective bargaining agreements or potential strikes, work stoppages or other similar events; changes in market demand for our products and services; rapid technological and market change; the ability to protect and avoid infringing upon intellectual property rights; challenges associated with the introduction or development of new products or transfer of work; higher risks in global operations and markets; the impact of intense competition; the physical and operational risks from natural disasters, severe weather events, climate change which may limit accessibility to sufficient water resources, outbreaks of contagious diseases and other adverse public health developments, and acts of terrorism; the failure to

achieve anticipated cost savings and benefits associated with workforce reductions and restructuring actions; currency fluctuations and foreign currency exposure; impacts from goodwill impairment and related charges; our dependence upon revenues and earnings from a small number of significant customers; a major loss of customers; inability to realize expected sales or profits from existing backlog due to a range of factors, including changes in customer sourcing decisions, material changes, production schedules and volumes of specific programs; the impact of government budget and funding decisions; government tariffs, trade agreements and trade policies; changes or uncertainties in laws, regulations, rates, policies or interpretations that impact the Company's business operations or tax status, including those that address climate change, environmental, health and safety matters, and the materials processed by our products or their end markets; fluctuations in the pricing or availability of raw materials, freight, transportation, utilities and other items required by our operations; labor shortages or other business interruptions at transportation centers, shipping ports, our suppliers' facilities or our facilities; disruptions in information technology systems, including as a result of cybersecurity attacks or data security breaches; the ability to hire and retain senior management and qualified personnel; the continuing impact of prior acquisitions and divestitures, and any other future strategic actions, and our ability to achieve the financial and operational targets set in connection with any such actions; the ability to achieve social and environmental performance goals; the outcome of pending and future litigation and governmental proceedings; the impact of actual, potential or alleged defects or failures of our products or third-party products within which our products are integrated, including product liabilities, product recall costs and uninsured claims; future repurchases of common stock; future levels of indebtedness; and other risks and uncertainties described in this Annual Report. The Company assumes no obligation to update its forward-looking statements.

PART I

Item 1. Business

BARNES GROUP INC. [1]

Barnes Group Inc. (the "Company") is a global provider of highly engineered products, differentiated industrial technologies, and innovative solutions, serving a wide range of end markets and customers. Its specialized products and services are used in far-reaching applications including healthcare, automation, packaging, aerospace, mobility, and manufacturing. The Company's skilled and dedicated employees around the globe are committed to the highest performance standards and achieving consistent, sustainable profitable growth.

Our Strategy

The Company's strategy consists of four pillars to drive our vision:

1. **Build a World-class Company Focused on High Margin, High Growth Businesses** - We proactively manage our business portfolio with a focus on multiple platforms and market channels, in end-markets where projected long-term growth and favorable macro-economic trends are present. By doing so, we expect to create superior value for our key stakeholders - our shareholders, customers, employees and the communities in which we operate.

2. **Leverage the Barnes Enterprise System ("BES") as a Significant Competitive Advantage** - BES is our integrated operating system that promotes a culture of employee engagement and empowerment and drives alignment across the organization around a common vision. BES standardizes our business processes to allow us to achieve commercial, operational and financial excellence in everything we do.

3. **Expand and Protect Our Intellectual Property to Deliver Differentiated Solutions** - Driven by a passion for innovation, we embrace intellectual property as a core differentiator to create proprietary products, processes and systems. We foster an environment that generates great ideas and shares best practices to maximize our collective strengths and create economies of scale in the development and commercialization of new and innovative products and services.

4. **Create Value for All Stakeholders** - Our employees continue to be our most important asset and are a key driver of our success. Underscoring our purpose and our commitment to providing opportunity for everyone who chooses to be a part of our family remains paramount. Our customers look to us for reliability, partnership and innovation. Under our new brand we seek to provide that and more – continuing to deliver excellence and anticipate the solutions they need. For our shareholders, we strive to deliver consistent, profitable growth and to be good stewards of capital. We aim to invest in the Company, both organically and acquisitively, to position our businesses to successfully compete in global markets, while generating top quartile shareholder returns. Finally, our commitment to environmental, social and governance ("ESG"), respecting and giving back to our communities, will always be foundational to who we are.

The Company continues to expand applied and fundamental research and development activities to generate a continuous flow of innovative new products and services for our customers. Focal areas include the development of new technology that significantly improves existing products, components, integrated systems and services, and the development of new applications for existing products and services. Our product development strategy is driven by product design teams and collaboration with our customers, particularly within Industrial's Molding Solutions and Automation businesses. Initial focus has been on four key technology platforms including digitalization, software, hardware and sensors, each of which we believe will be instrumental to the future success of the Company. These combined technologies are planned to be at the core of the next generation of products and services we bring to market. Investments in research and development are critical to our long-term growth, enabling us to meet changing customer and marketplace needs.

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[1] As used in this annual report, "Company," "Barnes Group," "we" and "ours" refer to the registrant and its consolidated subsidiaries except where the context requires otherwise, and "Industrial" and "Aerospace" refer to the registrant's segments, not to separate corporate entities.

Structure

The Company operates under two global business segments: Industrial and Aerospace. The Industrial segment includes the Molding Solutions, Force & Motion Control, Automation and Engineered Components business units. The Aerospace segment includes the Original Equipment Manufacturing ("OEM") business and the Aftermarket business, which includes maintenance repair and overhaul ("MRO") services and the manufacture and delivery of aerospace aftermarket spare parts.

REPORTABLE SEGMENTS

Industrial

The Industrial segment is a global provider of highly-engineered, high-quality precision components, products and systems for critical applications serving a diverse customer base in end-markets such as mobility, industrial equipment, automation, personal care, packaging, electronics, and medical devices. Focused on innovative custom solutions, Industrial participates in the design phase of components and assemblies whereby customers receive the benefits of application and systems engineering, new product development, testing and evaluation, and the manufacturing of final products. Products are sold primarily through its direct sales force and global distribution channels. Industrial's Molding Solutions business designs and manufactures customized hot runner systems, advanced mold cavity sensors and process control systems, and precision high cavitation mold assemblies - collectively, the enabling technologies for many complex injection molding applications. The Force & Motion Control business provides innovative cost-effective force and motion control solutions for a wide range of metal forming and other industrial markets. The Automation business designs and develops robotic grippers, advanced end-of-arm tooling systems, sensors and other automation components for intelligent robotic handling solutions and industrial automation applications. Industrial's Engineered Components business manufactures and supplies precision mechanical products used in transportation and industrial applications, including mechanical springs and high-precision punched and fine-blanked components.

Industrial competes with a broad base of large and small companies engaged in the manufacture and sale of engineered products, precision molds, hot runner systems, robotic handling solutions and precision components. Industrial competes on the basis of quality, service, reliability of supply, engineering and technical capability, geographic reach, product breadth, innovation, design, timeliness and price. Industrial has a global presence, with manufacturing, distribution and assembly operations in the United States, China, Germany, Italy, Sweden and Switzerland, among others. Industrial also has sales and service operations in the United States, China/Hong Kong, Germany, Italy and Switzerland, among others. For additional information regarding net sales by geographic area, refer to Notes 3 and 21 of the Consolidated Financial Statements. Sales by Industrial to its five largest customers accounted for approximately 10% of its sales in 2021.

Aerospace

Aerospace is a global manufacturer of complex fabricated and precision-machined components and assemblies for turbine engines, nacelles and structures for both commercial and defense-related aircraft. The Aerospace Aftermarket business provides aircraft engine component MRO services, including services performed under our Component Repair Programs ("CRPs"), for many of the world's major turbine engine manufacturers, commercial airlines and the defense market. The Aerospace Aftermarket business also manufactures and delivers aftermarket spare parts and participates in revenue sharing programs ("RSPs") under which the Company has an exclusive right to supply designated aftermarket parts over the life of specific aircraft engine programs.

Aerospace's OEM business offers a comprehensive range of in-house manufacturing solutions and capabilities, including components and assemblies. The applications for these components primarily include engines, airframes and nacelles. Aerospace OEM competes with a large number of fabrication and machining companies. Our competitive advantage is based mainly on value derived from quality, concurrent engineering and technical capability, product breadth, solutions-providing new product introduction, timeliness, service, price and intellectual property. Aerospace's fabrication and machining operations, with facilities in Connecticut, Michigan, Ohio, Utah and Singapore, produce critical engine, nacelle and airframe components through technologically advanced manufacturing processes.

The Aerospace Aftermarket business supplements jet engine OEMs' maintenance, repair and overhaul capabilities, and competes with the service centers of major commercial airlines and other independent service companies for the repair and overhaul of turbine engine components. The manufacture and supply of aerospace aftermarket spare parts, including those related to the RSPs, are dependent upon the reliable and timely delivery of high-quality components. Aerospace's Aftermarket facilities, located in Connecticut, Ohio and Singapore, specialize in the repair and refurbishment of highly engineered components and assemblies such as cases, rotating life limited parts, rotating air seals, turbine shrouds, vanes and honeycomb air seals. Aerospace Aftermarket's facility in Malaysia is focused on the supply of spare parts. For additional information regarding net sales by geographic area, refer to Notes 3 and 21 of the Consolidated Financial Statements. Sales by Aerospace to

its three largest customers, General Electric ("GE"), Rolls-Royce and Raytheon Technologies Corporation, accounted for approximately 55%, 10% and 7% of its sales in 2021, respectively. Sales to its next three largest customers in 2021 collectively accounted for approximately 9% of its total sales.

RESOURCES OF THE BUSINESS

Human Capital Management

Our people are one of our greatest assets. Our skilled and dedicated employees around the globe are committed to the highest performance standards and achieving consistent, sustainable profitable growth. At December 31, 2021, the Company had approximately 5,100 employees worldwide. Approximately 20% were in the Asia-Pacific region, 40% in the Europe, Middle East and Africa region and 40% in the Americas region.

The Company maintains a global Health, Safety and Environmental Affairs ("HSE") program which focuses on employee safety throughout the enterprise. Our HSE program maintains a set of HSE standards, consistent with our commitment to worker health and safety and to environmental protection, as well as with prevailing regulatory frameworks in place around the globe. All locations are required to meet local laws and regulations, or the HSE Standards, whichever are more stringent. We measure and monitor results using standard protocols, which are communicated to the senior leadership team and Board of Directors on a regular basis.

With the safety of our employees as our priority, we continuously focus on proactive risk identification and mitigation with emphasis on “practicing safety.” Employee health and safety remained center stage in 2021 as we continued to implement preventive measures and controls with the goal of protecting our employees and keeping our operations running safely.

The Company’s long history is grounded in its core values and principles which have guided our ongoing transformation and growth. Our Company Values promote a culture of collaboration, empowerment, diversity and inclusion, and an environment providing opportunity, dignity and respect for all of our employees. Grounded in these values and as an integral part of BES, we manage human capital through our Talent Management System ("TMS"). TMS integrates our key human resource processes and tools to facilitate talent management decisions and enables the Company to have the right people with the right skills in the right roles at the right time. TMS enhances our ability to attract and hire talented employees, as well as supports their growth, development and engagement - empowering them to perform at their very best, every day. Aligned with our vision, TMS helps accelerate the ongoing transformation of our Company, to drive business performance, and support the successful execution of the Company’s growth strategy.

The TMS framework focuses on five key areas (pillars) - Attract, Perform, Develop, Engage and Recognize – all supported by tools and processes that our employees, managers and leaders can use to support their own professional growth and development, as well as leverage to make better talent management decisions that promote and cultivate an agile and high performance organization.

Attract – encompasses the processes and tools available to employees and management that support and facilitates the planning and effective recruiting, hiring and on-boarding of our employees.

Perform – highlights the processes and tools that help our employees fully leverage and utilize their skills and capabilities to perform at their best and contribute meaningfully to achieving the goals and objectives of the business.

Develop – comprises the Human Resource processes and tools that support the growth and development of our employees through on-going training, skill-building, assessment, career planning and development and enrichment opportunities.

Engage – contains Human Resource programs and tools that support employee engagement and involvement across the Company and in the communities in which our employees work and live.

Recognize – aligned with our “pay-for-performance” philosophy, highlights Human Resource processes and programs used to recognize and reward our employees and facilitate their on-going engagement. Furthermore, our compensation programs are designed to align the compensation of our employees with the company’s performance provide the proper incentives to attract, retain and motivate employees to achieve superior results for both short-term and long-term performance.

In managing our global businesses, and as part of TMS, we focus on several human capital measures and objectives including those related to the hiring, performance, succession planning and retention of our employees. We accomplish this through the effective utilization of our robust TMS tools, and the ongoing commitment and engagement of the senior leadership team – all with a view of identifying and developing the next generation workforce, the future leaders of the Company and promoting a high-performance organization.

Intellectual Property

Patents and other proprietary rights, including trade secrets, unpatented know-how such as know-how related to manufacturing processes, and continuing technological innovations, are important to our business. We own a large portfolio of patents, trademarks and trade names and are a party to certain intellectual property licenses that enhance our competitive position. While we consider them to be valuable assets, we do not believe that any of these patents, trademarks or other intellectual property rights is individually significant to the Company or either of our segments. We maintain procedures to protect our intellectual property. For a discussion of certain risks related to the Company's intellectual property, see "Part I, Item 1A. Risk Factors - Risks Related to Intellectual Property".

Regulatory Capital Expenditures

The Company’s efforts to comply with numerous federal, state and local laws and regulations applicable to its business and products often results in capital expenditures. The Company makes capital expenditures to design and upgrade its aerospace and industrial products to comply with or exceed standards applicable to the industries we serve. The Company’s ongoing HSE compliance program also results in capital expenditures. Regulatory and HSE considerations are a part of significant capital expenditure decisions; however, expenditures during 2021 related solely to regulatory compliance were not material.

Raw Materials

The principal raw materials used to manufacture our products are various grades and forms of steel, from rolled steel bars, plates and sheets, to high-grade valve steel wires and sheets, various grades and forms (bars, sheets, forgings, castings and powders) of stainless steels, aluminum alloys, titanium alloys, copper alloys, graphite, and iron-based, nickel-based (Inconels) and cobalt-based (Hastelloys) superalloys for complex aerospace applications. Prices for steel, titanium, Inconel, Hastelloys, as well as other specialty materials, have periodically increased due to higher demand and, in some cases, reduction of the availability of materials. During portions of fiscal year 2021, for example, the Company experienced increased commodity and component prices and, in some instances, shortages due to supply chain disruptions, labor shortages, increased demand and other factors associated with COVID-19. The Company expects continued volatility in the availability and prices for commodities and raw materials that we use in our products and in our supply chain in fiscal year 2022.

SEASONALITY

No material portion of our business is considered to be seasonal.

EXECUTIVE OFFICERS OF THE COMPANY

For information regarding the Executive Officers of the Company, see Part III, Item 10 of this Annual Report.

GOVERNMENTAL REGULATIONS AND ENVIRONMENTAL MATTERS

We are subject to numerous environmental, legal, and regulatory requirements related to our products and global operations. For a discussion of the risks associated with these, see "Part I - Item 1A - Risk Factors."

We are subject to laws and regulations related to anti-corruption such as the U.S. Foreign Corrupt Practices Act, data privacy and security laws, such as the European Union's General Data Protection Regulation, and regulations relating to import-export control. A portion of our products, including defense-related products, may require governmental licenses. Additionally, our U.S. government contracts are generally subject to Federal Acquisition Regulations (“FAR”), agency-specific regulations that implement or supplement FAR, and other applicable laws and regulations which impose a broad range of requirements,

many of which are unique to government contracting. These include various procurement, import and export, security, disclosure of cost and pricing data, contract termination and adjustment, and audit requirements.

Our products and operations, including past and present business operations and, past and present ownership and operations of real property, are subject to a variety of extensive and changing U.S. federal, state, local, and non-U.S. environmental, health and safety laws and regulations concerning, among other things, the health and safety of our employees; product safety, packaging and labeling; the generation, storage, use, transportation and disposal of certain materials (including chemicals and hazardous materials) used in or derived from our manufacturing processes; emissions or discharges of substances into the environment; and investigation and remediation of hazardous substances or materials at various sites. We use and generate hazardous substances and wastes in our operations. In addition, many of our current and former properties are or have been used for industrial purposes. Accordingly, we monitor hazardous waste management and applicable environmental permitting and reporting for compliance with applicable laws at our locations in the ordinary course of our business.

Moreover, climate change and other ESG-related laws, regulations, treaties, and similar initiatives and programs are being adopted and implemented throughout the world, many of which we will be required to comply. We are committed to maintaining compliance with ESG-related laws applicable to our operations and products. We endeavor to meet this commitment through our global HSE program described above, and an approach to ethical standards and strong governance that are foundational to our business.

AVAILABLE INFORMATION

The Company maintains a website (www.barnesgroupinc.com) and our annual report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, and amendments to those reports are available without charge on our website as soon as reasonably practicable after they are filed with, or furnished to, the U.S. Securities and Exchange Commission ("SEC"). In addition, we have posted on our website, and will make available in print to any stockholder who makes a request, our Corporate Governance Guidelines, our Code of Business Ethics and Conduct ("Code"), and the charters of the Audit Committee, Compensation and Management Development Committee and Corporate Governance Committee (the responsibilities of which include serving as the nominating committee) of the Company's Board of Directors. We post in the Governance section of the Investor Relations page of our website information regarding any amendment to, or waiver from, the provisions of the Code to the extent such disclosure is required. References to our website addressed in this Annual Report are provided as a convenience and do not constitute, and should not be viewed as, an incorporation by reference of the information contained on, or available through, the website. Therefore, such information should not be considered part of this Annual Report.

Item 1A. Risk Factors

Our business, financial condition, results of operations and/or cash flows could be materially and adversely affected by any of the following risks. Our business could also be affected by additional risks that are not presently known to us or that we currently consider to be immaterial. The below risks should be read in conjunction with Part II - Item 7 - "Management's Discussion and Analysis of Financial Condition and Results of Operations."

RISKS RELATED TO THE COVID-19 PANDEMIC

Our business, results of operations and financial condition have been adversely affected, and could be materially adversely affected in the future, by the global COVID-19 pandemic and related economic disruptions. COVID-19 has negatively impacted the global economy, disrupted global supply chains, caused inflationary pressure in the U.S. and elsewhere, and created significant volatility, uncertainty and disruption within global financial markets. COVID-19 has adversely affected, and continues to pose risks to, our business, including our operational and financial performance, and may adversely impact our stock price, our ability to access capital markets and our ability to fund liquidity needs. Moreover, it may have the effect of heightening many of the other risks described in this Part I, Item 1A.

There is considerable uncertainty regarding the duration and extent to which COVID-19 will continue to spread in certain regions of the world; its severity; the emergence, contagiousness, and threat of new and different strains of the virus; the impact of measures to try to contain the virus, both within and outside the U.S., such as travel bans and restrictions, quarantines, shelter-in-place orders, vaccine and testing mandates, government shutdowns and other restrictions; disruptions or closures of our manufacturing operations or those of our customers and suppliers; the success of these measures; disruptions in the supply chain, including those caused by industry capacity constraints, material availability, and global logistics delays and constraints arising from, among other things, transportation capacity of ocean shipping containers; and an increasingly competitive labor market due to a sustained labor shortage or increased turnover. Efforts to combat the virus have been complicated by viral

variants and uneven access to, and acceptance and effectiveness of, vaccines globally. Although certain restrictions related to COVID-19 have eased, uncertainty continues to exist regarding such measures and potential future measures, and this uncertainty is expected to continue in 2022, and may significantly adversely affect our business and outlook.

We have incurred and expect to continue to incur increased operating expenses in order to protect our employees, including for personal protective equipment and medical/safety supplies, additional cleaning supplies and services, testing supplies, and vaccination and testing status tracking tools. Uncertainties also remain with regard to the impact of COVID-19 on our customers and customer demand for our products and services, customer restrictions on our ability to visit their sites or otherwise access their employees, and the ability of our customers to pay for our products and services. For example, customers may decelerate decision making, delay planned work or seek to terminate existing agreements. Additional uncertainties include our ability to sell and provide our products and services due to transportation challenges and increased logistics costs; adherence to applicable travel restrictions and “shelter in place” orders; challenges and additional operating costs associated with continued remote working arrangements; adherence to social distancing guidelines; employee absenteeism, including employees who perform critical functions, due to illness, quarantine as a result of exposure or failure to comply with vaccine or testing mandates and policies; increased privacy-related risks due to processing health-related personal information; and legal claims related to personal protective equipment furnished by the Company or alleged exposure to COVID-19 on our premises or as a result of our employees at customer sites.

COVID-19 has had and continues to have a material impact on air travel and the aviation industry. Several countries, including the United States, have taken steps to restrict air travel, and many companies have from time to time adopted policies prohibiting or curtailing non-essential business travel by their employees. Even in the absence of formal restrictions and prohibitions, infections and fear of contagion have adversely affected travel behavior which may continue. Moreover, airlines have, and may continue to have COVID-related staffing shortages resulting in flight cancellations and reduced numbers of flights. The foregoing has reduced demand for commercial aircraft. If COVID-19 continues to have a material impact on the airline and aviation industry, including on GE and our other large customers, it could continue to materially affect the business and results of operations of our Aerospace business.

RISKS RELATED TO OUR BUSINESSES AND THE INDUSTRIES WITHIN WHICH WE OPERATE

We depend on revenues and earnings from a small number of significant customers. Any bankruptcy of or loss of or cancellation, reduction or delay in purchases by these customers could harm our business. Net sales to GE and its subsidiaries in 2021 accounted for 16% of our total sales and approximately 55% of Aerospace's net sales. Aerospace's second and third largest customers, Rolls-Royce and Raytheon Technologies Corporation and their respective subsidiaries, accounted for 10% and 7%, respectively, of Aerospace's net sales in 2021. Approximately 9% of Aerospace's net sales in 2021 were to its next three largest customers. Approximately 10% of Industrial's sales in 2021 were to its five largest customers. Some of our success will depend on the business strength and viability of those customers. We cannot assure you that we will be able to retain our largest customers. Some of our customers may in the future reduce their purchases due to economic conditions or shift their purchases from us to our competitors, in-house or to other sources. Some of our long-term sales agreements provide that the customer may unilaterally reduce or discontinue its projected purchases without penalty or terminate for convenience. The loss of one or more of our largest customers, any reduction, cancellation or delay in sales to these customers (including a reduction in aftermarket volume in our Aerospace Aftermarket business' Revenue Sharing Programs), our inability to successfully develop relationships with new customers, or future price concessions we make to retain customers could significantly reduce our sales and profitability.

We may not recover all of our up-front costs related to new or existing programs. New programs may require significant up-front investments for capital equipment, engineering, inventory, design and tooling. As OEMs in the transportation and aerospace industries have looked to suppliers to bear increasing responsibility for the design, engineering and manufacture of systems and components, they have increasingly shifted the financial risk associated with those responsibilities to the suppliers as well. This trend may continue and is most evident in the area of engineering cost reimbursement. We cannot assure you that we will have adequate funds to make such up-front investments or to recover such costs from our customers as part of our product pricing or through sales volume. In such event, our profitability, liquidity and cash flows may be adversely affected. In addition, we incur costs and make capital expenditures for new program awards based upon certain estimates of production volumes and production complexity. While we attempt to recover such costs and capital expenditures by appropriately pricing our products, the prices of our products are based in part upon planned production volumes. If the actual production is significantly less than planned or significantly more complex than anticipated, we may be unable to recover such costs. In addition, because a significant portion of our overall costs is fixed, declines in our customers’ production levels can adversely affect the level of our reported profits even if our up-front investments are recovered.

We may not realize all of the sales expected from our existing backlog or anticipated orders. At December 31, 2021, we had $904.6 million of order backlog, the majority of which related to Aerospace OEM customers, as compared with $832.7 million at the end of 2020. Of the 2021 year-end backlog, $689.6 million was attributable to Aerospace and $215.0 million was attributable to Industrial. Approximately 55% of the Company's consolidated year-end backlog is expected to be recognized during 2022, with the remainder scheduled to be recognized after 2022. There can be no assurances that the revenues projected in our backlog will be realized or, if realized, will result in profits. We consider backlog to be firm customer orders for future delivery. OEM customers may provide projections of components and assemblies that they anticipate purchasing in the future under existing programs. These projections may represent orders that are beyond lead time and are included in backlog when supported by a long term agreement. Our customers may have the right under certain circumstances or with certain penalties or consequences to terminate, reduce or defer firm orders that we have in backlog. If this occurs, we may be protected from certain costs and losses, but our sales will nevertheless be adversely affected. Although we strive to maintain strong relationships with our customers, there is an ongoing risk that orders may be canceled or rescheduled due to fluctuations in our customers' business requirements.

Also, our realization of sales from new and existing programs is inherently subject to a number of important risks and uncertainties, including whether our customers execute the launch of programs on time, or at all, the number of units that our customers actually produce, the timing of production and manufacturing insourcing decisions made by our customers. In addition, until firm orders are placed, our customers may have the right to discontinue a program or replace us with another supplier at any time without penalty. Our failure to realize sales from new and existing programs could have a material adverse effect on our net sales, results of operations and cash flows.

We face risks of cost overruns and losses on fixed-price contracts and orders in backlog. We sell certain of our products under firm, fixed-price contracts providing for a fixed price for the products regardless of the production or purchase costs incurred by us, which includes certain orders in backlog, some of which have long lead times. The cost of producing and delivering products may be adversely affected by increases in the cost of labor, materials, fuel, outside processing, freight, shipping, overhead and other factors, including manufacturing inefficiencies. Such increased costs may result in cost overruns and losses on contracts.

Original equipment manufacturers in the aerospace and transportation industries have significant pricing leverage over suppliers and may be able to achieve price reductions over time. Additionally, we may not be successful in our efforts to raise prices on our customers. While many of our customers permit periodic adjustments to pricing based on changes in component prices and other factors, we may bear the risk of price increases that occur between any such repricing or, if such repricing is not permitted, during the balance of the term of the particular customer contract. There is substantial and continuing pressure from OEMs in the aerospace and transportation industries, including automotive, to reduce the prices they pay to suppliers. We attempt to manage such downward pricing pressure, while trying to preserve our business relationships with our customers, by seeking to reduce our production costs through various measures, including purchasing raw materials and components at lower prices and implementing cost-effective process improvements. Our suppliers have periodically resisted, and in the future may resist, pressure to lower their prices and may seek to impose price increases. If we are unable to offset OEM price reductions, our profitability and cash flows could be adversely affected. In addition, OEMs have substantial leverage in setting purchasing and payment terms, including the terms of accelerated payment programs under which payments are made prior to the account due date in return for an early payment discount. OEMs can unexpectedly change their purchasing policies and/or payment practices, which could have a negative impact on our short-term working capital.

We operate in highly competitive markets. Our future growth is dependent upon our ability to bring to market competitive, and increasingly complex, new products and services that achieve market acceptance with acceptable margins. Our two global business segments compete with a number of larger and smaller companies in the markets we serve. Some of our competitors have greater financial, production, research and development, or other resources than we do. Within Aerospace, certain of our OEM customers compete with our repair and overhaul business, and some compete with us where they have the ability to manufacture the components and assemblies that we supply to them but have chosen, for capacity limitations, cost considerations or other reasons, to outsource the manufacturing to us. Our customers award business based on, among other things, price, quality, reliability of supply, service, technology and design. Our competitors' efforts to grow market share could exert downward pressure on our product pricing and margins. Our competitors may also develop products or services, or methods of delivering those products or services, that are superior to ours. In addition, our competitors may adapt more quickly than us to new technologies or evolving customer requirements. We cannot assure you that we will be able to compete successfully with our existing or future competitors.

The industries in which we operate have been experiencing consolidation, both in our suppliers and the customers we serve. Supplier consolidation is in part attributable to OEMs more frequently awarding long-term sole source or preferred supplier contracts to the most capable suppliers in an effort to reduce the total number of suppliers. If consolidation of our

existing competitors or customers occurs, we would expect the competitive pressures we face to increase, and we cannot assure you that our business, financial condition, results of operations or cash flows will not be adversely impacted as a result.

Our operations focus on highly engineered components which require extensive engineering and research and development time. Moreover, our ability to develop new products and services and to compete successfully will depend, in part, on our ability to continue to make investments of significant resources. These efforts divert resources from other potential investments in our businesses, may not lead to the development of new products or services on a timely basis, and may require us to reduce costs by such means as reducing excess capacity, improving productivity, eliminating redundancies and increasing production in low-cost countries. We have invested, and expect to continue to invest, in increasing our manufacturing footprint in low-cost countries. We cannot assure you that we will have sufficient resources to continue to make such investments or that we will be successful in maintaining our competitive position. If we are unable to differentiate our products and services or maintain a low-cost footprint, we may lose market share or be forced to reduce prices, thereby lowering our margins.

Our competitive advantage may be adversely impacted if we cannot continue to introduce new products ahead of our competition, or if our products are rendered obsolete by other products or by new, different technologies and processes. The success of our new products will depend on a number of factors, including innovation, customer acceptance, the efficiency of our suppliers in providing materials and component parts, and the performance and quality of our products relative to those of our competitors. Additionally, we may face increased or unexpected costs associated with new product introduction, including the use of additional resources such as personnel and capital. We cannot provide assurance that we will not experience new product introduction delays in the future. As we introduce new products, we may be unable to detect and correct defects in product design. Even after introduction, new or enhanced products may not satisfy customer preferences and product failures may cause customers to reject our products. As a result, these products may not achieve market acceptance and our brand image could suffer. Any such occurrences could significantly reduce our revenues, increase our operating costs, or otherwise materially and adversely affect our business, financial condition, results of operations and cash flows.

The development of new products and services presents security risks. An increasing number of our products and services, including our moldMIND® product line, are delivered with digital capabilities and the accompanying interconnected device networks, some of which include sensors, data, and advanced computing capabilities. If we are unable to manage the lifecycle cybersecurity risk in development, deployment and operation of our digital platforms and services, the possible consequences include financial loss, reputational damage, exposure to legal claims or enforcement actions, theft of intellectual property, the diminution in the value of our investment in research, development and engineering, and increased cybersecurity protection and remediation costs, which in turn could adversely affect our business, financial condition, results of operations and cash flows.

A significant portion of the sales of certain businesses within our Industrial segment are realized from the design, manufacture, distribution and service of highly-engineered and customized products and systems for plastic injection molding and plastics processing across a broad spectrum of applications. Sales volume is dependent upon the need for equipment used to produce plastic products, which may be significantly influenced by the demand for plastic products, the capital investment needs of companies in the plastic injection molding and plastics processing industries, changes in technological advances, and changes in laws or regulations such as those related to single-use plastics, product and packaging composition, and recycling. Decrease in demand for plastic products or equipment used in the production of plastic products or unfavorable developments in these industries generally could have a material adverse effect on our business, financial condition, and results of operations.

Demand for our defense-related products depends on government spending. A portion of Aerospace's sales is derived from defense markets, including single-sourced and dual-sourced sales. The defense market is largely dependent upon government budgets and is subject to governmental appropriations. Although multi-year contracts may be authorized in connection with major procurements, funds are generally appropriated on a fiscal year basis even though a program may be expected to continue for several years. Consequently, programs are often only partially funded and additional funds are committed only as further appropriations are made. We cannot assure you that maintenance of or increases in defense spending will be allocated to programs that would benefit our business. Moreover, we cannot assure you that new defense-related aircraft programs in which we participate will enter full-scale production as expected. A decrease in levels of defense spending or the government's termination of, or failure to fully fund, one or more of the contracts for the programs in which we participate could have a material adverse effect on our financial position and results of operations.

The aerospace industry is highly regulated. Complications related to aerospace regulations may adversely affect the Company. A substantial portion of our income is derived from our aerospace businesses. The aerospace industry is highly regulated in the U.S. by the Federal Aviation Administration and in other countries by similar regulatory agencies. We must be certified by these agencies and, in some cases, by individual OEMs in order to engineer, produce and service systems and

components used in specific aircraft models. If material authorizations or approvals were delayed, suspended or revoked, our business could be adversely affected. In the future, new or more stringent governmental regulations may be adopted or industry oversight heightened, and we may incur significant expenses to comply with any such new regulations or heightened industry oversight.

Fluctuations in the price of jet fuel, resins, energy and other raw materials and their availability may impact our operating results. Fuel costs constitute a significant portion of operating expenses for companies in the aerospace industry. Fluctuations in fuel costs could impact levels and frequency of aircraft maintenance and overhaul activities, and airlines' decisions on maintaining, deferring or canceling new aircraft purchases, in part based on the value associated with new fuel efficient technologies. Increases in fuel prices can also increase our packaging and transportation costs. Both we and our customers purchase supplies of resins, which are oil-based components used in the manufacture of certain products, and any significant increases in resin costs could adversely impact future operating results, including as a result of customers' decisions on maintaining, deferring or canceling new programs. Weather-related events, natural disasters, political disruptions or wars involving oil-producing countries, changes in governmental policy concerning aircraft fuel production, changes in refining capacity, and other unpredictable events may result in future fuel supply shortages and fuel price increases. For example, widespread disruption to oil production, refinery operations and pipeline capacity in certain areas of the U.S. can impact the price of jet fuel significantly. Geopolitical conflicts, such as conflicts in the Middle East, an important source of oil for the U.S. and other countries where we do business, cause prices for fuel to be volatile. In addition, new laws or regulations adopted in response to climate change could increase energy and transportation costs, as well as the costs of certain raw materials and components. Recently, the costs of certain raw materials, transportation and energy necessary for our operations and the production and distribution of our products have increased significantly. While we have implemented cost containment measures and selective price increases, as well as taken other actions to offset these inflationary pressures in our supply chain, we may not be able to completely offset all the increases in our operational costs, and there could be a material adverse effect on our financial condition or results of operations.

RISKS ASSOCIATED WITH OPERATING A GLOBAL BUSINESS AND REGULATORY RISKS

Our operations depend on our global manufacturing, sales and service facilities and information systems which are subject to physical, environmental, operational and other risks that could disrupt our operations. We have a significant number of manufacturing facilities, technical service centers, and sales and distribution centers both within and outside the U.S. The global scope of our business subjects us to increased risks and uncertainties such as threats of war, terrorism and instability of governments, and economic, regulatory and legal systems in countries in which we or our customers conduct business. In addition, our customers' and suppliers' facilities, as well as our own facilities, are located in areas that may be affected by natural disasters, including earthquakes, windstorms, droughts and floods, or by limited accessibility to sufficient water resources, which could cause significant physical damage and disruption to our equipment and facilities, as well as the infrastructure of our customers and suppliers, and, in turn, could have a material adverse effect on our business, financial condition, results of operations and cash flows. Additionally, some of our manufacturing equipment and tooling is custom-made and is not readily replaceable. Loss of such equipment or tooling could have a negative impact on our manufacturing capabilities and, as a result, our financial condition, results of operations and cash flows.

A major catastrophe such as an earthquake, windstorm, drought, flood or other natural disaster, infectious disease outbreak, significant labor strikes, work stoppages, or political unrest, in any of the areas where we or our customers or key suppliers conduct operations could result in a prolonged interruption of our business. Any disruption resulting from these events could cause significant delays in the manufacture or shipment of products or the provision of repair and other services that may result in our loss of sales and customers. Although we have obtained property damage and business interruption insurance, our insurance will not cover all potential risks, and we cannot assure you that we will have adequate insurance to compensate us for all losses that result from any insured risks. Any material loss not covered by insurance could have a material adverse effect on our financial condition, results of operations and cash flows. We cannot assure you that insurance will be available in the future at a cost acceptable to us or at a cost that will not have a material adverse effect on our profitability, net income and cash flows.

The global nature of our operations subjects us to financial and regulatory risks in the countries in which we and our customers, suppliers and other business partners operate. In addition, we sell or may in the future sell our products and services to the U.S. and foreign governments and in foreign countries. As a global business, we are subject to complex laws, regulations and other conditions in the U.S. and other countries in which we operate, and associated risks, including: U.S.-imposed embargoes of sales to specific countries; foreign import controls; import regulations and duties; export regulations (which require us to comply with stringent licensing regimes); reporting requirements regarding the use of "conflict" minerals mined from certain countries; anti-dumping regulations; unclaimed property laws; price and currency controls; dividend remittance restrictions; expropriation of assets; war, civil uprisings and riots; government instability; government-imposed economic uncertainties, such as a prolonged U.S. federal government shutdown; government contracting requirements

including cost accounting standards and various procurement, security and audit requirements, as well as requirements to certify to the government compliance with these requirements; the necessity of obtaining governmental approval for new and continuing products and operations; and legal systems or decrees, laws, taxes, regulations, interpretations and court decisions that are not always fully developed and that may be retroactively or arbitrarily applied. We have experienced inadvertent violations of some of these regulations, including export regulations and regulations prohibiting sales of certain products in the past, none of which has had or, we believe, will have a material adverse effect on our business. Any significant violations of these or other regulations in the future could result in civil or criminal sanctions, suspension of production, loss of export or other licenses, other restrictions on our operations or damage to our reputation. We may also be subject to unanticipated income taxes, excise and custom duties, import taxes, export taxes, value added taxes, or other governmental assessments, and taxes may be impacted by changes in legislation in the tax jurisdictions in which we operate. In addition, our organizational and capital structure may limit our ability to transfer funds between countries without incurring adverse tax consequences. Any of these events could result in a loss of business or other unexpected costs that could reduce sales or profits and have a material adverse effect on our financial condition, results of operations and cash flows.

We are subject to environmental laws and regulations and the risk of environmental liabilities, violations and litigation. We are subject to a variety of U.S. federal, state, local and non-U.S. environmental, health and safety laws and regulations concerning, among other things, the health and safety of our employees, the generation, storage, use, transportation and disposal of certain materials including hazardous materials, emissions or discharges of substances into the environment, and investigation and remediation of hazardous substances or materials at various sites. Our operations involve the use of substances subject to these laws and regulations, primarily those used in manufacturing processes. Our failure to comply with these laws or regulations could result in regulatory penalties, fines, and legal liabilities; suspension of production; alteration of our manufacturing; damage to our reputation; and restrictions on our operations or sales. Furthermore, environmental laws outside of the U.S. are becoming more stringent, resulting in increased costs and compliance burdens.

In addition, certain environmental laws assess liability on current or previous owners or operators of real property for the costs of investigation, removal or remediation of hazardous substances or materials at their properties or at properties from or upon which they have disposed of hazardous substances. In addition to cleanup actions brought by governmental authorities or private parties could bring personal injury or other claims due to the presence of, or exposure to, hazardous substances. The ultimate cost of site cleanup and timing of future cash outflows is difficult to predict, given the uncertainties regarding the extent of the required cleanup, the interpretation of applicable laws and regulations, and alternative cleanup methods.

The costs of complying with current or future environmental protection and health and safety laws and regulations, or liabilities arising from past or future releases of, or exposures to, hazardous substances, may exceed our estimates, or have a material adverse effect on our business, results of operations, financial condition, and cash flows.

Climate change, or legal, regulatory or market measures to address climate change, may materially adversely affect our financial condition and business operations. Climate change resulting from increased concentrations of greenhouse gases in the atmosphere could present risks to our future operations from natural disasters and extreme weather conditions, such as hurricanes, tornadoes, earthquakes, wildfires, droughts or flooding. Such extreme weather conditions could pose physical risks to our facilities and disrupt operation of our supply chain and may impact operational costs. The impacts of climate change on global water resources may result in water scarcity, which could in the future impact our ability to access sufficient quantities of water in certain locations and result in increased costs.

Concern over climate change will likely result in new legal or regulatory requirements designed to reduce greenhouse gas emissions and mitigate the effects of climate change. Further, our customers and the markets we serve may impose emissions reduction or other environmental standards and requirements, including plastic injection molding and plastics processing and conventional fuel-based automotive markets. As a result, we may experience increased compliance burdens and operational costs and raw material sourcing, manufacturing operations and the distribution of our products may be adversely affected. Moreover, we may not be able to timely meet these requirements due to the required level of capital investment or technological advancement. While we have been committed to continuous improvements to meet anticipated regulations and preferences, there can be no assurance that our commitments will be successful, that our products will be accepted by the market, that proposed regulations will not have a negative competitive impact or that economic returns will reflect our investments in new product development. There also continues to be a lack of consistent climate legislation, which creates economic and regulatory uncertainty. These factors may impact the demand for our products, obsolescence of certain products and adversely affect our results of operations.

As of the date of this filing, we have made several public commitments regarding our intended reduction of carbon emissions, water consumption and waste generation. Although we intend to meet these commitments, we may be required to expend significant resources to do so, which could increase our operational costs. Further, there can be no assurance of the

extent to which any of our commitments will be achieved, or that any future investments we make in furtherance of achieving such targets and goals will meet investor expectations or any binding or non-binding legal standards regarding sustainability performance. Moreover, we may determine that it is in the best interest of our Company and our stockholders to prioritize other business, social, governance or sustainability investments over the achievement of our current commitments based on economic, regulatory and social factors, business strategy or pressure from investors, activist groups or other stakeholders. If we are unable to meet these commitments, then we could incur adverse publicity and reaction from investors, activist groups our other stakeholders, which could adversely impact the perception of us and our products and services by current and potential customers, as well as investors, which could in turn adversely impact our results of operations.

We could be adversely affected by violations of the U.S. Foreign Corrupt Practices Act ("FCPA") and similar worldwide anti-corruption laws and data privacy and security laws. The FCPA and similar anti-corruption laws generally prohibit companies and their intermediaries from making improper payments to government officials for the purpose of obtaining or retaining business or obtaining an unfair advantage. Recent years have seen a substantial increase in the global enforcement of anti-corruption laws. Our operations outside the United States, including in developing countries, expose us to the risk of such violations. Our policies mandate compliance with these anti-corruption laws. Despite our training and compliance program, we cannot provide assurance that our internal control policies and procedures will always protect us from reckless or criminal acts committed by our employees or agents. Violations, or allegations, could damage our reputation, as well as result in substantial fines, sanctions, civil and/or criminal penalties, termination of relationships with business partners and curtailment of operations in certain jurisdictions, and as a result might materially and adversely affect our business, results of operations or financial condition.

Additionally, to conduct our operations, we regularly move data across borders, and consequently we are subject to a variety of increasingly complex and changing laws and regulations regarding privacy, data protection and data security, including those related to the collection, storage, use, transmission and protection of personal information and other customer, vendor or employee data. The interpretation and enforcement of such laws and regulations, such as the European Union's General Data Protection Regulation, are continuously developing and evolving and there is significant uncertainty with respect to how compliance with these laws and regulations may evolve and the costs and complexity of future compliance. Violations could result in substantial fines, sanctions or civil penalties, damage to our reputation and might materially and adversely affect our business, results of operations or financial condition.

International trade policies may impact demand for our products and our competitive position. Our results could be impacted by changes in tariffs, trade agreements or other trade restrictions imposed or agreed to by the U.S. or foreign governments. For example, a government's adoption of "buy national" policies or retaliation by another government against such policies could have a negative impact on our results of operations. Trade restrictions, including withdrawal from or modification of existing trade agreements, negotiation of new trade agreements, and imposition of new (and retaliatory) tariffs against certain countries or covering certain products, including developments in U.S.-China trade relations, has the potential to adversely impact demand for our products, our costs, customers, suppliers and/or the U.S. or foreign economies or certain sectors thereof in which we compete, and impair our ability to expand our business by offering new technologies, products and services. It remains unclear what the U.S. federal government or foreign governments will or will not do in the future with respect to tariffs or other international trade agreements and policies. Trade restrictions, and changes in or uncertainty surrounding global trade policies, may adversely impact our competitive position, businesses, financial condition, results of operations and cash flows.

The global nature of our business exposes us to foreign currency fluctuations that may affect our future revenues, debt levels and profitability. As noted above, we have manufacturing facilities and technical service centers, and sales and distribution centers around the world, and the majority of our foreign operations use the local currency as their functional currency. These include, among others, the Brazilian real, British pound sterling, Canadian dollar, Czech koruna, Chinese renminbi, Euro, Japanese yen, Korean won, Malaysian ringgit, Mexican peso, Singaporean dollar, Swedish krona, and the Swiss franc. Since our financial statements are denominated in U.S. dollars, changes in currency exchange rates between the U.S. dollar and other currencies expose us to translation risk when the local currency financial statements are translated to U.S. dollars. Changes in currency exchange rates may also expose us to transaction risk. We may buy hedges in certain currencies to reduce or offset our exposure to currency exchange rate fluctuations; however, these transactions may not be adequate or effective to protect us against unfavorable exchange rate fluctuations. We have not engaged in any speculative hedging activities. Currency fluctuations may adversely impact our revenues and profitability in the future.

RISKS RELATED TO SUPPLY AND MANUFACTURING

The ability of suppliers to deliver raw materials, parts and components and energy resources, and our ability to manufacture without disruption, could affect our results of operations. We use a wide range of materials (including steel,

stainless steel, titanium, aluminum, Inconel, Hastelloys and other specialty materials) and components (including semiconductors and other electronic components) in the global production of our products, which come from numerous suppliers around the world. Our operations and those of our suppliers are subject to disruption for a variety of reasons, including COVID-19 related supplier plant shutdowns or slowdowns, transportation delays, work stoppages, labor shortages, price inflation, financial issues such as supplier bankruptcy, information technology failures, and hazards such as fire, earthquakes, flooding, droughts or other natural disasters, new laws or regulations, global economic or political events including terrorist attacks and war, and suppliers' allocations to other purchasers. Because not all of our business arrangements provide for guaranteed supply, and some key raw materials, parts and components and energy resources may be available only from a single supplier or a limited group of suppliers, we are subject to supply and pricing risk. For example, we expect to continue to be impacted by the following supply chain issues, due to economic, political and other factors largely beyond our control: increased material costs and component shortages, supply chain disruptions and delays, and cost inflation, all of which could continue or escalate in the future. The effects of climate change, including extreme weather events, long-term changes in temperature levels, water availability, supply costs impacted by increasing energy costs, or energy costs impacted by carbon prices or offsets may exacerbate these risks. Such disruptions could interrupt our ability to manufacture certain products and result in increased pricing, and could materially and adversely affect our business, financial condition, results of operations and cash flows.

Any product liability, warranty, contractual or other claims may harm our business or otherwise adversely affect our financial condition. We are exposed to potential product liability risks that are inherent in the design, manufacture and sale of our products and the products we buy from third parties and sell to our customers, and to potential warranty, contractual or other claims. Our products are complex and may contain defects, errors, or experience failures or unsatisfactory performance, due to any number of issues, including issues in materials, design, fabrication, packaging and/or use within a system or item of equipment. Further, because of the complexity of our products, defects or errors might only be detected when the products are in use. Development of new products increases complexity and adds risk to manufacturing reliability, and increases the likelihood of product defects or errors. Risks associated with product defects are exacerbated by the fact that our customers typically integrate our products into other equipment and systems. Our products may be responsible for critical functions in our customers' products. Failure of our products to perform to specifications, or other product defects, could lead to substantial damage to the products we sell to our customers, the equipment and/or systems into which our products are integrated and to the end users of such equipment/and or systems. Such defects could give rise to warranty claims or claims under indemnification clauses in our agreements, which may range from individual customer claims to full recalls of all products in the field, and result in significant costs, including costs related to developing solutions, recalling products, inspecting, repairing or replacing defective products, or writing down defective inventory, and could result in the loss of sales and divert the attention of our engineering personnel from our product development efforts. In addition, defects in our products could result in failure to achieve market acceptance, a loss of participation in customer programs, a shifting of business to our competitors, and litigation or regulatory action against us, and could harm our reputation, our relationships with customers and our ability to attract new customers, as well as the perceptions of our brands. Other potential adverse impacts of product defects include shipment delays, write-offs of property, plant and equipment and intangible assets, and losses on unfavorable purchase commitments.

Moreover, the occurrence of defects may give rise to product liability claims, particularly if defects in our products or the products into which they are integrated result in personal injury or death, and could result in significant costs, expenses and losses. For example, we may be exposed to potential liability for personal injury, property damage or death as a result of the failure of an aircraft or automotive component designed, manufactured or sold by us, or the failure of an aircraft or automotive component that has been serviced by us or of the components themselves. If a product liability claim is brought against us, the cost of defending the claim could be significant, and could divert the efforts of our technical and management personnel and harm our business, even if we are successful. We may be named in product liability claims even if there is no evidence that our products caused the damage in question, and even though we may have indemnity from our customers, and such claims could result in significant costs and expenses.

We vigorously defend ourselves in connection with these matters. We cannot, however, assure you that the costs, charges and liabilities associated with these matters will not be material, or that those costs, charges and liabilities will not exceed any amounts reserved for them in our Consolidated Financial Statements. Further, while we have liability insurance for certain risks, our insurance may not cover all liabilities, including potential reputational impacts. Additionally, insurance coverage may not be available in the future on acceptable terms or at a cost acceptable to us. The above is exacerbated by the fact that our products may be used, and perform critical functions, in various high-risk applications such as aerospace, automobiles, and robotics, among others. Accordingly, defects in our products could have an adverse impact on us, on our customers and the end users of our customers' products. If any of these risks materialize, there could be a material adverse effect on our business, results of operations and financial condition.

RISKS RELATED TO HUMAN CAPITAL

Our future success depends, in part, on our ability to continue to attract, develop, engage and retain qualified employees. Our executive officers and key management personnel are critical to driving business performance and successfully executing the Company's growth strategy. Because of the complex nature of many of our products and services, and our focus on technological and product innovations, we are generally dependent on an educated and highly skilled workforce, including our engineering talent and our sales professionals. We manage human capital through our Talent Management System, which is aimed at enhancing our ability to attract and hire talented employees, as well as supporting their growth, development and engagement; however, we cannot guarantee the system's effectiveness. Failure to attract, develop, engage and retain qualified employees, whether as a result of an insufficient number of qualified applicants, difficulty in recruiting new employees, or inadequate resources to train, integrate and retain qualified employees, could impair our ability to execute our business strategy, and could adversely affect our business, financial condition, results of operations or cash flows. In addition, while we aim to reduce the impact of the departure of employees, our operations or ability to execute our business strategy may be impacted by the loss of employees, particularly when departures involve groups of employees, such as the restructuring and workforce reduction actions taken in 2020. Such losses may adversely affect the Company through decreased employee morale, the loss of knowledge of departing employees, and the devotion of resources to reorganizing and reassigning job roles and responsibilities, and could increase the risk of claims or litigation from former employees.

Our business, financial condition, results of operations and cash flows could be adversely impacted by strikes or work stoppages. We employ approximately 5,100 people worldwide. Approximately 30% of these employees are covered by collective bargaining agreements, trade union agreements and/or national industry agreements. Although we believe that our relations with our employees and labor unions that represent our employees are good, and we have experienced no material strikes or work stoppages recently, we cannot assure you that we will not experience in the future these and other types of conflicts with labor unions, works councils, other groups representing employees or our employees generally, nor that any future negotiations with our labor unions will not result in significant increases in the cost of labor, including healthcare, pensions or other benefits. Any potential strikes or work stoppages, and the resulting adverse impact on our relationships with customers, could have a material adverse effect on our business, financial condition, results of operations or cash flows. Similarly, a protracted strike or work stoppage at any of our major customers, suppliers or other vendors could materially adversely affect our business.

RISKS RELATED TO INFORMATION TECHNOLOGY, CYBERSECURITY AND DATA PRIVACY

Any disruption or failure in the operation of our information systems, including from conversions or integrations of information technology ("IT") or reporting systems, could have a material adverse effect on our business, financial condition, results of operations and cash flows. Our IT systems are an integral part of our business. We depend upon our IT systems to help communicate internally and externally, to manage and support a variety of business processes and activities, such as processing orders, managing inventory, making payments, collecting accounts receivable, and storing information. We are relying on our IT infrastructure to support our operations as we manage the impact of COVID-19, including through initiating remote-work protocols for a substantial number of our employees in regions impacted by the spread of the virus. In addition, our IT systems allow us to purchase, sell and ship products efficiently and on a timely basis, to maintain cost-effective operations, and to help provide superior service to our customers. Moreover, we use IT systems to record, process and summarize financial information and results of operations for internal reporting purposes and to comply with regulatory financial reporting, legal and tax requirements. We periodically implement, upgrade and integrate IT systems, such as our enterprise resource planning ("ERP") and customer relationship management ("CRM") platforms across our businesses. If we experience a problem with the functioning of an important IT system as a result of the increased burden placed on our IT infrastructure or a security breach, including during system upgrades and/or new system implementations, the resulting disruptions could have an adverse effect on our business or operating results.

Increased cybersecurity requirements, vulnerabilities, threats and more sophisticated and targeted IT-related crime could pose a risk to our systems, networks, products, data and services and have a material adverse effect on our business, financial condition, results of operations and cash flows. In the ordinary course of our business, we store sensitive data, including intellectual property, our proprietary business information and that of our customers, suppliers and business partners, and personally identifiable information in our data centers and on our networks. In addition to traditional IT systems, we leverage cloud-based systems, where data is stored and exchanged with external third party vendors. The secure maintenance and transmission of this information is critical to our business operations. Despite our security measures, our IT systems and infrastructure, including vendor-hosted systems, may be vulnerable to attacks by hackers or breached due to employee error, malfeasance or other disruptions. These cybersecurity threats and incidents can range from uncoordinated individual attempts to gain unauthorized access to IT systems to sophisticated and targeted measures known as advanced

persistent threats, directed at the Company, its products, its customers and/or its third-party service providers, including cloud providers. These threats and incidents originate from many sources globally and include malwares that take the form of computer viruses, ransomware, worms, Trojan horses, spyware, adware, scareware, rogue software, and programs that act against the computer user. Our customers are increasingly requiring cybersecurity protections, and we may incur additional costs to comply with such demands. We seek to deploy measures to deter, prevent, detect, respond to and mitigate these threats, including identity and access controls and vulnerability assessments, but, despite these efforts, cybersecurity incidents, depending on their nature and scope, could compromise our networks and the information stored there, including critical data and confidential or proprietary information (our own or that of third parties), could be accessed, altered, publicly disclosed, lost or stolen. Such incidents could remain undetected for an extended period of time, and the losses arising from such incidents could exceed our available insurance coverage for such matters. Such incidents could also disrupt our operations, result in increased cybersecurity protection and remediation costs, legal claims or proceedings, liability under laws that protect the privacy of personal information, regulatory penalties, theft of intellectual property, and damage our reputation, which could adversely affect our business, revenues and competitive position. Further, cybersecurity and data protection laws and regulations continue to evolve in the U.S. and worldwide. This adds compliance complexity and may increase our costs of compliance and expose us to litigation, monetary damages, regulatory enforcement actions or fines in one or more jurisdictions. In addition, as security threats continue to evolve and increase in frequency and sophistication, it will likely require investing in additional resources to protect the security of our IT systems.

RISKS RELATED TO INTELLECTUAL PROPERTY

We may be unable to adequately protect or enforce our intellectual property rights. Our intellectual property rights may not be sufficiently broad or otherwise may not provide us a significant competitive advantage, and patents may not be issued for pending or future patent applications owned by or licensed to us. As patents expire, we could face increased competition, which could negatively impact our operating results. Infringement of our intellectual property and other proprietary rights by a third party could result in uncompensated lost market and revenue opportunities. We cannot be certain that the measures we have implemented will prevent our intellectual property from being improperly disclosed, challenged, invalidated, or circumvented, particularly in countries where intellectual property rights are not highly developed or protected. For example, competitors may avoid infringement by designing around our intellectual property rights or by developing non-infringing competing technologies. We may need to spend significant resources monitoring and enforcing our intellectual property rights and we may not be aware of or able to detect or prove infringement by third parties. Our ability to enforce our intellectual property rights is subject to litigation risks, as well as uncertainty as to the protection and enforceability of those rights in some countries. If we seek to enforce our intellectual property rights, we may be subject to claims that those rights are invalid or unenforceable, and others may seek counterclaims against us, which could have a negative impact on our business. In addition, changes in intellectual property laws or their interpretation may impact our ability to protect and assert our intellectual property rights, increase costs and uncertainties in the prosecution of patent applications and enforcement or defense of issued patents, and diminish the value of our intellectual property. If we do not protect and enforce our intellectual property rights successfully, or if they are circumvented, invalidated, or rendered obsolete by the rapid pace of technological change, it could have an adverse impact on our competitive position and our operating results.

Our employees, consultants and other parties are subject to confidentiality obligations, but this protection may be inadequate to deter or prevent misappropriation, theft, misuse, disclosure, loss or destruction of our proprietary information and/or infringement of our intellectual property. For example, employees and former employees, in particular former employees who become employees of our competitors, may misappropriate, use, publish or provide to our competitors, customers or other third parties our intellectual property or other proprietary information. Similarly, we provide access to certain of our intellectual property and other proprietary information to our direct and indirect customers and certain of our consultants who may wrongfully use or disclose such intellectual property or information. Any of these events could harm our competitive position, reduce the value of our investment in research and development and other strategic initiatives, cause us to lose business, damage our reputation, subject us to legal or regulatory proceedings, cause us to incur other loss or liability and otherwise adversely affect our business.

Third parties may claim that one or more of our products or services infringe their intellectual property rights. Regardless of the merit of such claims, any dispute or litigation regarding patents or other intellectual property could be costly and time-consuming to defend and resolve due to the complexity of our technology and the uncertainty of intellectual property litigation, and could divert our management and key personnel from our business operations. A claim of intellectual property infringement could force us to enter into a costly or restrictive license agreement, which might not be available under acceptable terms or at all, require us to redesign our products, which would be costly and time-consuming, or subject us to significant damages or to an injunction against the development and sale of certain of our products or services. Our intellectual property portfolio may not be useful in asserting a counterclaim, or negotiating a license, in response to a claim of intellectual property infringement. In addition, we may face claims based on the theft or unauthorized use or disclosure of third-party trade

secrets and other confidential business information. Any such incidents and claims could severely harm our business and reputation, result in significant expenses, harm our competitive position, and prevent us from selling certain products, all of which could have a significant adverse impact on our business and results of operations.

RISKS RELATED TO LIQUIDITY AND OTHER RISKS

We have significant indebtedness that could affect our operations and financial condition, and our failure to meet certain financial covenants required by our debt agreements may materially and adversely affect our assets, financial position and cash flows. At December 31, 2021, we had consolidated debt obligations of $603.7 million, representing approximately 30% of our total capital (indebtedness plus stockholders' equity) as of that date. Our level of indebtedness, proportion of variable rate debt obligations and the significant debt servicing costs associated with that indebtedness may adversely affect our operations and financial condition. For example, our indebtedness could require us to dedicate a substantial portion of our cash flows from operations to payments on our debt, thereby reducing the amount of our cash flows available for working capital, capital expenditures, investments in technology and research and development, acquisitions, dividends and other general corporate purposes; limit our flexibility in planning for, or reacting to, changes in the industries in which we compete; place us at a competitive disadvantage compared to our competitors, some of whom have lower debt service obligations and greater financial resources than we do; limit our ability to borrow additional funds; or increase our vulnerability to general adverse economic and industry conditions. In addition, a majority of our debt arrangements require us to maintain certain debt and interest coverage ratios and limit our ability to incur debt, make investments or undertake certain other business activities. These requirements could limit our ability to obtain future financing and may prevent us from taking advantage of attractive business opportunities. Our ability to meet the financial covenants or requirements in our debt arrangements may be affected by events beyond our control, and we cannot assure you that we will satisfy such covenants and requirements. A breach of these covenants or our inability to comply with the restrictions could result in an event of default under our debt arrangements which, in turn, could result in an event of default under the terms of our other indebtedness. Upon the occurrence of an event of default under our debt arrangements, after the expiration of any grace periods, our lenders could elect to declare all amounts outstanding under our debt arrangements, together with accrued interest, to be immediately due and payable. If this were to happen, we cannot assure you that our assets would be sufficient to repay in full the payments due under those arrangements or our other indebtedness or that we could find alternative financing to replace that indebtedness.

Conditions in the worldwide credit markets may limit our ability to expand our credit lines beyond current bank commitments. In addition, our profitability may be adversely affected as a result of increases in interest rates. At December 31, 2021, we and our subsidiaries had $603.7 million aggregate principal amount of consolidated debt obligations outstanding, of which approximately 66% had interest rates that float with the market (not hedged against interest rate fluctuations). A 100 basis point increase in the interest rate on the floating rate debt in effect at December 31, 2021 would result in an approximate $4.0 million annualized increase in interest expense.

We have significant goodwill and an impairment of our goodwill could cause a decline in our net worth. Our total assets include substantial goodwill. At December 31, 2021, our goodwill totaled $955.4 million. The goodwill results from our prior acquisitions, representing the excess of the purchase price we paid over the net assets of the companies acquired. We assess whether there has been an impairment in the value of our goodwill during each calendar year or more frequently if an event or change in circumstances indicates that the fair value of a reporting unit has been reduced below its carrying value. If future operating performance at one or more of our reporting units does not meet expectations or fair values fall due to significant stock market declines, we may be required to reflect a non-cash charge to operating results for goodwill impairment. The recognition of an impairment of a significant portion of goodwill would negatively affect our results of operations and total capitalization, the effect of which could be material. See "Part II - Item 7 - Management's Discussion and Analysis of Financial Condition and Results of Operations - Critical Accounting Policies".

We may not realize all of the intangible assets related to the Aerospace Aftermarket businesses. We participate in aftermarket RSPs under which we receive an exclusive right to supply designated aftermarket parts over the life of the related aircraft engine program to our customer, GE. As consideration, we pay participation fees, which are recorded as intangible assets and are recognized as a reduction of sales over the estimated life of the related engine programs. Our total investments in participation fees under our RSPs as of December 31, 2021 equaled $299.5 million, all of which have been paid. At December 31, 2021, the remaining unamortized balance of these participation fees was $147.5 million.

We entered into CRPs, also with GE, which provide for, among other items, the right to sell certain aftermarket component repair services for CFM56, CF6, CF34 and LM engines directly to other customers over the life of the engine program as one of a few GE licensed suppliers. In addition, the CRPs extended certain contracts under which the Company currently provides these services directly to GE. Our total investments in CRPs as of December 31, 2021 equaled $111.8 million, all of which have been paid. At December 31, 2021, the remaining unamortized balance of the CRPs was $76.2

million. We recorded the CRP payments as intangible assets which are recognized as a reduction of sales over the remaining useful life of these engine programs.

The realizability of each asset is dependent upon future revenues related to the programs' aftermarket parts and services and is subject to impairment testing if circumstances indicate that its carrying amount may not be recoverable. The potential exists that actual revenues will not meet expectations due to a change in market conditions, including, for example, the replacement of older engines with new, more fuel-efficient engines or our ability to maintain market share within the aftermarket business. A shortfall in future revenues may result in the failure to realize the net amount of the investments, which could adversely affect our financial condition and results of operations. In addition, profitability could be impacted by the amortization of the participation fees and licenses, and the expiration of the international tax incentives on these programs. See “Part II - Item 7 - Management's Discussion and Analysis of Financial Condition and Results of Operations - Critical Accounting Policies”.

We carry significant inventories and a loss in net realizable value could cause a decline in our net worth. At December 31, 2021, our inventories totaled $239.7 million. Inventories are valued at the lower of cost or net realizable value based on management's judgments and estimates concerning future sales levels, quantities and prices at which such inventories will be sold in the normal course of business. Accelerating the disposal process or changes in estimates of future sales potential may necessitate future reduction to inventory values. See “Part II - Item 7 - Management's Discussion and Analysis of Financial Condition and Results of Operations - Critical Accounting Policies”.

We maintain pension and other postretirement benefit plans in the U.S. and certain international locations. Our costs of providing defined benefit plans are dependent upon a number of factors, such as the rates of return on the plans’ assets, interest rates, exchange rate fluctuations, future governmental regulation, global fixed income and equity prices, and our required and/or voluntary contributions to the plans. Declines in the stock market, prevailing interest rates, declines in discount rates, improvements in mortality rates and rising medical costs may cause an increase in our pension and other postretirement benefit expenses in the future and result in reductions in our pension fund asset values and increases in our pension and other postretirement benefit obligations. These changes have caused and may continue to cause a significant reduction in our net worth and without sustained growth in the pension investments over time to increase the value of the plans’ assets, and depending upon the other factors listed above, we could be required to increase funding for some or all of these pension and postretirement plans.

Changes in taxation requirements could affect our financial results. Our products are subject to import and excise duties and/or sales or value-added taxes in many jurisdictions in which we operate. Increases in indirect taxes could affect our products’ affordability and therefore reduce our sales. We are also subject to income tax in numerous jurisdictions in which we generate revenues. Changes in tax laws, tax rates or tax rulings may have a significant adverse impact on our effective tax rate. Among other things, our tax liabilities are affected by the mix of pretax income or loss among the tax jurisdictions in which we operate and the potential repatriation of foreign earnings to the U.S. Further, during the ordinary course of business, we are subject to examination by the various tax authorities of the jurisdictions in which we operate which could result in an unanticipated increase in taxes. Any potential changes or interpretive guidance may impact current and deferred income tax expense and deferred tax balances for U.S operations as well as the potential future repatriation of foreign income. The impact of any proposed changes in tax regulations may adversely affect our financial condition, results of operations and cash flow.

Changes in accounting guidance could affect our financial results. New accounting guidance that may become applicable to us from time to time, or changes in the interpretations of existing guidance, could have a significant effect on our reported results for the affected periods. Adoption of new accounting guidance could have a material impact on our financial statements and may retroactively affect the accounting treatment of transactions completed before adoption. See Note 1 of the Consolidated Financial Statements.

Actions of activist stockholders could cause us to incur substantial costs, divert management’s attention and resources, and have an adverse effect on our business. From time to time, we may be subject to proposals by stockholders urging us to take certain corporate actions. If activist stockholder activities ensue, our business could be adversely affected because responding to proxy contests and reacting to other actions by activist stockholders can be costly and time-consuming, disrupt our operations and divert the attention of management and our employees. For example, we may be required to retain the services of various professionals to advise us on activist stockholder matters, including legal, financial, and communications advisers, the costs of which may negatively impact our future financial results. In addition, perceived uncertainties as to our future direction, strategy or leadership created as a consequence of activist stockholder initiatives may result in the loss of potential business opportunities, harm our ability to attract new investors, customers, and employees, and cause our stock price to experience periods of volatility or stagnation.

RISKS RELATED TO STRATEGIC TRANSACTIONS

Our restructuring actions could have long-term adverse effects on our business. From time to time, we have implemented restructuring activities across our businesses to adjust our cost structure, and we may engage in similar restructuring activities in the future. We may not achieve expected cost savings from workforce reductions or restructuring activities and actual charges, costs and adjustments due to these actions may vary materially from our estimates. Our ability to realize anticipated cost savings, synergies and revenue enhancements may be affected by a number of factors, including the following: our ability to effectively eliminate duplicative back office overhead and overlapping sales personnel, rationalize manufacturing capacity, synchronize IT systems, consolidate warehousing and other facilities and shift production to more economical facilities, significant cash and non-cash integration and implementation costs or charges in order to achieve those cost savings, which could offset any such savings; and our ability to avoid labor disruption in connection with these activities. In addition, delays in implementing planned restructuring activities or other productivity improvements may diminish the expected operational or financial benefits.

Our acquisition and other strategic initiatives, some of which may be outside the industries in which we currently operate, may not be successful. We have made a number of acquisitions in the past, and we anticipate that we may, from time to time, acquire additional businesses, assets or securities of companies, and enter into joint ventures and other strategic relationships that we believe would provide a strategic fit with our businesses. These activities expose the Company to a number of risks and uncertainties, the occurrence of any of which could materially adversely affect our business, cash flows, financial condition and results of operations. A portion of the industries that we serve are mature industries. As a result, our future growth may depend in part on the successful acquisition and integration of acquired businesses into our existing operations. On the other hand, if we acquire a company that operates in an industry that is different from the ones in which we currently operate, our lack of experience with that company's industry could have a material adverse impact on our ability to manage that business and realize the benefits of that acquisition. We may not be able to identify and successfully negotiate suitable acquisitions, obtain financing on satisfactory terms, negotiate reasonable terms, properly perform due diligence and determine all the significant risks associated with a particular acquisition, avoid diversion of our management's attention from other important business activities, or obtain regulatory approvals or otherwise complete acquisitions in the future.

We could have difficulties integrating acquired businesses with our existing operations, including coordinating and consolidating separate systems, retaining market acceptance of acquired products and services, maintaining employee morale and retaining key employees, and implementing our enterprise resource planning systems and operational procedures and disciplines. Any such difficulties may make it more difficult to maintain relationships with employees, customers, business partners and suppliers. In addition, even if integration is successful, the financial performance of acquired businesses may not be as expected and there can be no assurance that we will realize anticipated benefits from our acquisitions. We cannot assure you that we will effectively assimilate the business or product offerings of acquired companies into our business or product offerings or realize anticipated operational synergies. These activities may result in difficulties, significant expense and accounting charges, disrupt our business or divert management’s time and attention.

Acquisitions involve numerous other risks, including potential exposure to unknown liabilities of acquired companies and the possible loss of key employees and customers of the acquired business. Certain of the acquisition agreements by which we have acquired businesses require the former owners to indemnify us against certain liabilities related to the business operations before we acquired it. However, the liability of the former owners is limited and certain former owners may be unable to meet their indemnification responsibilities. We cannot assure you that these indemnification provisions will protect us fully or at all, and as a result we may face unexpected liabilities that adversely affect our financial condition. In connection with acquisitions or joint venture investments outside the U.S., we may enter into derivative contracts to purchase foreign currency in order to hedge against the risk of foreign currency fluctuations in connection with such acquisitions or joint venture investments, which subjects us to the risk of foreign currency fluctuations associated with such derivative contracts. Additionally, our final determinations and appraisals of the fair value of assets acquired and liabilities assumed in our acquisitions may vary materially from earlier estimates.

We continually assess the strategic fit of our existing businesses and may divest or otherwise dispose of businesses that are deemed not to fit with our strategic plan or are not achieving the desired return on investment, and we cannot be certain that our business, operating results and financial condition will not be materially and adversely affected. A successful divestiture depends on various factors, including our ability to effectively transfer liabilities, contracts, facilities and employees to any purchaser, identify and separate the intellectual property to be divested from the intellectual property that we wish to retain, reduce fixed costs previously associated with the divested assets or business, and collect the proceeds from any divestitures. In addition, if customers of the divested business do not receive the same level of service from the new owners, this may adversely affect our other businesses to the extent that these customers also purchase other products offered by us. All

of these efforts require varying levels of management resources, which may divert our attention from other business operations. If we do not realize the expected benefits, our consolidated financial position, results of operations and cash flows could be negatively impacted. In addition, divestitures of businesses involve a number of risks, including significant costs and expenses, the loss of customer relationships, and a decrease in revenues and earnings associated with the divested business. Furthermore, divestitures potentially involve significant post-closing separation activities, which could involve the expenditure of material financial resources and significant employee resources. Any divestiture may result in a dilutive impact to our future earnings if we are unable to offset the dilutive impact from the loss of revenue associated with the divestiture, as well as significant write-offs, including those related to goodwill and other intangible assets, which could have a material adverse effect on our results of operations and financial condition.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

Number of Facilities - Owned

Location	Industrial	Aerospace	Other	Total
Manufacturing:				
North America	5	5	—	10
Europe	8	—	—	8
Asia	1	2	—	3
Central and Latin America	2	—	—	2
	16	7	—	23
Non-Manufacturing:				
North America	—	—	1*	1
	—	—	1	1

* The Company's Corporate office.

Number of Facilities - Leased

Location	Industrial	Aerospace	Other	Total
Manufacturing:				
North America	3	3	—	6
Europe	4	—	—	4
Asia	4	6	—	10
	11	9	—	20
Non-Manufacturing:				
North America	8	2	1**	11
Europe	22	1	—	23
Asia	25	—	—	25
Central and Latin America	3	—	—	3
	58	3	1	62

** Industrial Segment headquarters and certain Shared Services groups.

Item 3. Legal Proceedings

We are subject to litigation from time to time in the ordinary course of business and various other suits, proceedings and claims are pending against us and our subsidiaries. While it is not possible to determine the ultimate disposition of each of these proceedings and whether they will be resolved consistent with our beliefs, we expect that the outcome of these proceedings, individually or in the aggregate, will not have a material adverse effect on our consolidated financial position, cash flows or results of operations.

Item 4. Mine Safety Disclosures

Not applicable.

PART II

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

Market Information

The Company's common stock is traded on the New York Stock Exchange under the symbol "B". As of February 16, 2022, there were approximately 1,664 holders of record of the Company's common stock.

Dividends

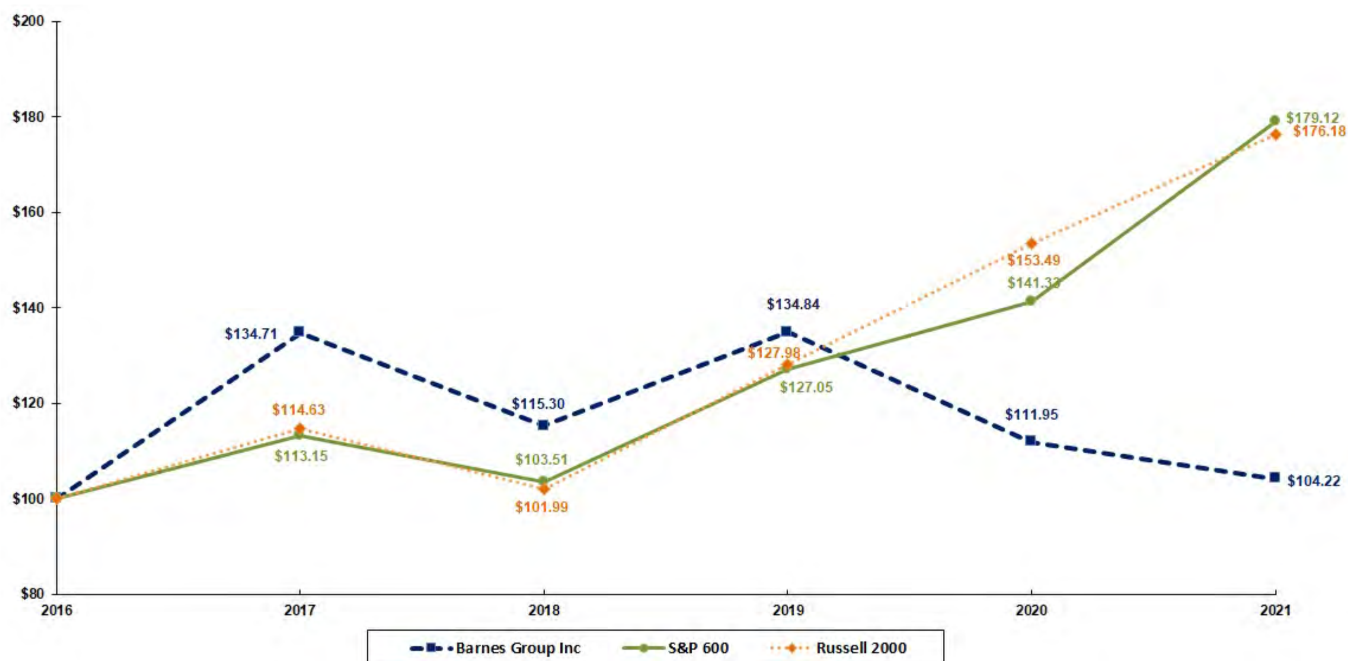
Payment of future dividends will depend upon the Company's financial condition, results of operations and other factors deemed relevant by the Company's Board of Directors, as well as any limitations resulting from financial covenants under the Company's credit facilities or debt indentures.

Securities Authorized for Issuance Under Equity Compensation Plans

For information regarding Securities Authorized for Issuance Under Equity Compensation Plans, see Part III, Item 12 of this Annual Report.

Performance Graph

A stock performance graph based on cumulative total returns (price change plus reinvested dividends) for $100 invested in the Company on December 31, 2016 is set forth below.



	2016	2017	2018	2019	2020	2021
BGI	$100.00	$134.71	$115.30	$134.84	$111.95	$104.22
S&P 600	$100.00	$113.15	$103.51	$127.05	$141.33	$179.12
Russell 2000	$100.00	$114.63	$101.99	$127.98	$153.49	$176.18

The performance graph includes the S&P 600 Small Cap Index and the Russell 2000 Index, both of which include the Company.

Issuer Purchases of Equity Securities

Period	Total Number of Shares (or Units) Purchased		Average Price Paid Per Share (or Unit)	Total Number of Shares (or Units) Purchased as Part of Publicly Announced Plans or Programs	Maximum Number of Shares (or Units) that May Yet Be Purchased Under the Plans or Programs(2)
October 1-31, 2021	409		$ 43.24	—	3,604,000
November 1-30, 2021	97		$ 44.21	—	3,604,000
December 1-31, 2021	922		$ 46.57	—	3,604,000
Total	1,428	(1)	$ 45.45	—	

(1) All acquisitions of equity securities during the fourth quarter of 2021 were the result of the operation of the terms of the Company's stockholder-approved equity compensation plans and the terms of the equity rights granted pursuant to those plans to pay for the related income tax upon issuance of shares. The purchase price of a share of stock used for tax withholding is the market price on the date of issuance.

(2) At March 31, 2019, 1.5 million shares of common stock had not been purchased under the publicly announced Repurchase Program (the "Program" or "Repurchase Program"). On April 25, 2019, the Board of Directors of the Company increased the number of shares authorized for repurchase under the Program by 3.5 million shares of common stock (5.0 million authorized, in total). The Program permits open market purchases, purchases under a Rule 10b5-1 trading plan and privately negotiated transactions.

Item 6. Reserved

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations

The following discussion should be read in conjunction with our consolidated financial statements and related notes in this Annual Report on Form 10-K. In addition to historical information, this discussion contains forward-looking statements that involve risks, uncertainties, and assumptions that could cause actual results to differ materially from our expectations. Factors that could cause such differences include those described in the section titled "Risk Factors" and elsewhere in this report. We undertake no obligation to update any of the forward-looking statements.

OVERVIEW

The Company achieved sales of $1,258.8 million in 2021, an increase of $134.5 million, or 12.0%, from 2020. Organic sales (net sales excluding both foreign currency translation, acquisition, and divestiture impacts) increased by $119.6 million, or 10.6%, including increases of $111.5 million, or 14.5%, at Industrial and $8.1 million, or 2.3% at Aerospace. The Company completed the sale of its Seeger business on February 1, 2020, reducing sales by $5.3 million in the 2021 period relative to the prior year period. The weakening of the U.S. dollar against foreign currencies increased net sales within the Industrial segment by approximately $20.2 million. Operating income increased 21.6% from $123.4 million in 2020 to $150.0 million in 2021 and operating margin increased from 11.0% in 2020 to 11.9% in 2021.

Impact of COVID-19

Global industrial and aerospace end markets came under significant pressure in 2020 as a result of COVID-19, restricting the level of global economic activity and causing a significant contraction in the economy. COVID-19 continued to present challenges across our businesses in 2021, with impacts including labor disruptions, supply chain constraints, inflationary pressures resulting in increased freight and raw material costs, amongst others. The Company has remained focused on cost management and productivity initiatives to mitigate these impacts, in addition to maintaining the safety of our employees, particularly throughout a recent resurgence of COVID-19 in the fourth quarter of 2021.

Throughout the pandemic and in support of continuing its manufacturing efforts, the Company continues to take a number of steps to protect its employees, suppliers and customers, as their safety and well-being is priority. The Company instituted additional precautions to comply with health and safety guidelines and to protect its employees, including enhanced deep cleaning, staggered shifts, temperature checking, use of face masks, practicing social distancing and limiting non-employees at our locations, amongst other safety related policies and procedures. Many of the Company's office workers in our manufacturing facilities, as well as the Corporate and segment headquarters, continue to work remotely, where possible. The Company's global supply chain management team continues to monitor and manage its ability to operate effectively given recent disruptions within its supply chain. Ongoing communications with the Company's suppliers to identify and mitigate risk and to manage inventory levels have continued. Notwithstanding the Company's continued operations, COVID-19 has had and may have further negative impacts on its operations, customers and supply chain despite the preventative and mitigating measures being taken. Uncertainties remain with regard to the impact of COVID-19 on our customers and customer demand for our products and services, as well as customer restrictions on our ability to visit their sites or otherwise access their employees. The Company will continue to monitor its facilities to ensure that they are in compliance with its safety requirements although the Company's facilities have generally operated at normal levels throughout 2020 and 2021.

The Company, as noted above, has continued to actively manage costs throughout the pandemic. To better align costs with the current business environment, the Company has taken several actions, which included restructuring and workforce reductions in 2020. Resulting pre-tax charges of $19.1 million were recorded in 2020, including $18.2 million and $0.9 million of charges that impacted operating income and Other Expense (Income), respectively. Pre-tax charges of $1.0 million were additionally recorded during 2021. See additional discussion within "Results of Operations" below.

Business Transformation

Acquisitions and strategic relationships with our customers have been a key growth driver for the Company, and we continue to seek alliances which foster long-term business relationships. These acquisitions have allowed us to extend into new or adjacent markets, expand our geographic reach, and commercialize new products, processes and services. The Company continually evaluates its business portfolio to optimize product offerings and maximize value. We have significantly transformed our business with our entrance into new markets, including most recently automation, and we continue to pursue strategic additions that align with our portfolio of differentiated products.

Management Objectives

Management is focused on continuing the Company's transformation by executing on its profitable growth strategy comprised of the following elements:

- Build a world-class Company focused on high margin, high growth businesses
- Leverage the Barnes Enterprise System ("BES") as a significant competitive advantage
- Expand and protect our intellectual property to deliver differentiated solutions
- Create value for all stakeholders.

The successful execution of this strategy requires making value-enhancing investments in organic growth (new products, processes, systems, services, markets and customers) and strategic acquisitions while divesting of businesses or existing product lines to effectively redeploy capital. Management remains focused on a deeper deployment of BES across the Company to advance commercial excellence, operational excellence and financial excellence.

The combined benefits from growth investment and execution of the strategic enablers are expected to generate long-term value for the Company's shareholders, customers and employees.

Our Business

The Company consists of two operating segments: Industrial and Aerospace.

Key Performance Indicators

Management evaluates the performance of its reportable segments based on the sales, operating profit, operating margins and cash generation of the respective businesses. Each segment has standard key performance indicators (“KPIs”), a number of which are focused on employee safety-related metrics (total recordable incident rate and lost time incident rate), customer metrics (on-time-delivery and quality), internal effectiveness and productivity/efficiency metrics (sales effectiveness, global sourcing, operational excellence, functional excellence, cost of quality, days working capital and return on invested capital) and specific KPIs on profitable growth.

Key Industry Data

In both segments, management tracks a variety of economic and industry data as indicators of the health and outlook of a particular sector.

At Industrial, key data for the manufacturing operations include the Institute for Supply Management’s manufacturing PMI Composite Index (and similar indices for European and Asian-based businesses); the Bureau of Economics Industrial Production Index ("the IPI"); IHS-Markit worldwide forecasts for light vehicle production, as well as new model introductions and existing model refreshes; North American heavy duty vehicle production; interconnection consulting hot runner systems worldwide report for auto, medical, personal care and packaging industries; and global GDP growth forecasts.

At Aerospace, management of the Aftermarket business monitors the number of aircraft in the active fleet, the number of aircraft temporarily or permanently taken out of service, aircraft utilization rates for the major airlines, engine shop visits, airline profitability, aircraft fuel costs and passenger traffic. The Aerospace OEM business regularly tracks orders, backlog and deliveries for each of the major aircraft manufacturers, as well as engine purchases made for new aircraft. Management also monitors annual appropriations for the U.S. defense market related to purchases of new or used aircraft and engine components.

RESULTS OF OPERATIONS

Sales

($ in millions)	2021	2020	$ Change	% Change	2019
Industrial	**$ 896.5**	$ 770.1	$ 126.4	16.4 %	$ 938.5
Aerospace	**362.4**	354.3	8.1	2.3 %	552.6
Total	**$ 1,258.8**	$ 1,124.4	$ 134.5	12.0 %	$ 1,491.1

The Company reported net sales of $1,258.8 million in 2021, an increase of $134.5 million, or 12.0%, from 2020. Organic sales increased by $119.6 million, including increases of $111.5 million and $8.1 million at Industrial and Aerospace, respectively. The year-over-year increase at Industrial was driven by organic sales increases across the Industrial business units, driven primarily by recovering end-markets within each of the businesses, although continuing pressures resulting from semiconductor shortages and global supply chain sourcing constraints impacted recent automotive and broader industrial production. These pressures, largely associated with the continued effects and resurgence of COVID-19, impacted sales volumes within Industrial during the second half of 2021. Within Aerospace, the sales improvement relative to the 2020 period was driven by a volume increase within the Aerospace OEM business, whereas the Aerospace Aftermarket business was down slightly. The Company completed the sale of its Seeger business on February 1, 2020, reducing sales by $5.3 million during the 2021 period relative to the 2020 period. The weakening of the U.S. dollar against foreign currencies increased net sales within the Industrial segment by approximately $20.2 million. The Company's international sales increased by 14.6% year-over-year while domestic sales increased by 8.2%. Excluding the impact of foreign currency translation on sales, however, the Company's international sales in 2021 increased by 11.5% from 2020.

Expenses and Operating Income

($ in millions)	**2021**	**2020**	**$ Change**	**% Change**	**2019**
Cost of sales	**$ 803.9**	$ 721.2	$ 82.6	11.5 %	$ 944.2
% sales	**63.9 %**	64.1 %			63.3 %
Gross profit [1]	**$ 455.0**	$ 403.2	$ 51.8	12.9 %	$ 547.0
% sales	**36.1 %**	35.9 %			36.7 %
Selling and administrative expenses	**$ 305.0**	$ 279.8	$ 25.2	9.0 %	$ 310.5
% sales	**24.2 %**	24.9 %			20.8 %
Operating income	**$ 150.0**	$ 123.4	$ 26.6	21.6 %	$ 236.4
% sales	**11.9 %**	11.0 %			15.9 %

(1) Sales less cost of sales

Cost of sales in 2021 increased 11.5% from 2020 (as compared with the 12.0% increase in net sales noted above) and gross profit margin increased slightly in 2021. Gross margins were relatively flat at both Industrial and Aerospace, with the mix between the segments resulting in a slight improvement. At Industrial, gross profit increased primarily as a result of the profit contribution of higher sales volumes. Gross profit margins at Industrial during the 2021 and 2020 periods remained flat as the profit contribution of increased sales volume was partially offset by an increase in global sourcing costs, including increased freight and raw material. Within Aerospace, gross profit and gross profit margins remained relatively flat in 2021 driven by lower volumes on a full year basis within the higher margin Aftermarket businesses as compared to the 2020 period, largely offset by cost savings and productivity initiatives taken by management. Selling and administrative expenses in 2021 increased 9.0% from the 2020 period. Sales, however, increased 12.0% between the 2021 and 2020 periods. As a percentage of sales, selling and administrative costs decreased from 24.9% in 2020 to 24.2% in the 2021 period. The decrease in selling and administrative costs as a percentage of sales was driven by the absence of the $18.2 million of pre-tax charges related to restructuring and workforce actions and $2.5 million of divestiture charges related to the completion of the Seeger sale. Partially offsetting this decrease were investments in growth and innovation, and an increase in employee related costs, including incentive compensation within both segments. Operating income in 2021 increased 21.6% to $150.0 million from the 2020 period and operating income margin increased from 11.0% in the 2020 period to 11.9% in the 2021 period, primarily driven by the items noted above.

Interest expense

Interest expense in 2021 increased $0.3 million to $16.2 million from 2020, primarily as a result of the impact of higher average interest rates, partially offset by decreased borrowings during the period.

Other expense (income), net

Other expense (income), net in 2021 was $6.0 million compared to $5.9 million in 2020. Other expense (income) during the 2021 and 2020 periods includes other components of pension expense (income) of $2.4 million and $1.5 million, respectively. Other expense (income) also includes foreign currency losses of $0.6 million in the 2021 period compared with losses of $1.5 million in the 2020 period.

Income Taxes

The Company's effective tax rate was 21.9% in 2021, compared with 37.6% in 2020. The decrease in the effective tax rate in 2021 was primarily due to the absence of tax expense related to the completed sale of the Seeger business in 2020, a benefit related to a realignment of tax basis goodwill and intangibles (discussed below), a benefit related to the Mutual Aid Process ("MAP") approval (discussed below), a favorable mix in earnings based on tax jurisdictions and a decrease in the global intangible low-taxed income ("GILTI") tax.

During the second quarter of 2021, the Italian tax authorities released tax guidance related to the application of tax basis realignment rules for intangible property ("Realignment") which provides Italian taxpayers with the opportunity to step up the basis of goodwill and intangibles to their fair market value and amortize the step up over 18 years for tax purposes in exchange for paying a 3% tax on the step up, payable over a three years period. The Company opted to elect the Realignment in June 2021 and accordingly recorded a tax payable of $3.0 million and a long-term tax payable of $6.0 million. The Company made its first required installment payment of $3.0 million during the third quarter of 2021, reducing the long-term tax payable accordingly. The Company also recorded a deferred tax asset of $83.9 million related to the Realignment. Accounting guidance requires that when a deferred tax asset is realigned for tax purposes, a corresponding revaluation reserve also be recorded. Under Italian tax rules, any dividends paid out of this revaluation reserve are subject to tax at a 24% rate. Accordingly, the Company recorded a deferred tax liability of $72.2 million related to the potential 24% tax due on any dividends, paid out of the revaluation reserve. The deferred tax asset and liability balances have been presented on a net basis on the Consolidated Balance Sheets. The Company also recorded a one-time $2.7 million benefit to the provision related to this election and related accounting. In December 2021 the Italian government increased the amortization period to 50 years; however the change has no impact on the accounting for the transaction as reported above.

In 2019 and 2017, the Company recorded additional income taxes resulting from audits at certain subsidiaries in Germany. The Company filed applications with the Internal Revenue Service ("IRS") under the MAP to allow for offsetting positions within the US tax filings for the Germany-related adjustments. In 2021 the MAP applications were approved by the IRS. The Company recognized a tax benefit of $2.0 million in 2021 to reflect the tax benefit realized as a result of the IRS approval.

The Aerospace and Industrial segments have a number of multi-year tax holidays in Singapore, China and Malaysia. The previous tax holiday in China expired at the end of 2020. The Company re-applied for the holiday and it was approved in December 2021. As a result of this tax holiday, the China tax rate was reduced from 25% to 15% and is effective for a three year period commencing January 1, 2021 (retroactively). Aerospace was granted an income tax holiday for operations recently established in Malaysia. This holiday commenced effective November 2020 (retroactively) and remains effective for a period of ten years. The Singapore tax holiday is scheduled to expire in December 2022. These holidays are subject to the Company meeting certain commitments in the respective jurisdictions.

During 2021, the Company repatriated $68.3 million, compared to $85.0 million in 2020. Pursuant to the Tax Cuts and Jobs Act (“Act”), neither dividend was taxable in the U.S in 2021. The Act, which was enacted in 2017, made broad and complex changes to the U.S. Tax Code and included, but was not limited to, requiring a one-time Transition Tax on certain unrepatriated accumulated earnings of foreign subsidiaries of the Company (payable over eight years) and exempted foreign dividends paid to the U.S. during the year from taxation if such earnings were included within the Transition Tax.

In 2022, the Company expects the effective tax rate to approximate 26%, an increase from the rate of 21.9% in 2021. The increase in the effective tax rate is driven primarily by the absence of the tax benefits recognized in 2021 relating to the realignment of tax basis of goodwill and intangibles and the MAP approval. An unfavorable projected earnings mix is also expected to contribute to the increase in the effective tax rate in 2022.

See Note 14 of the Consolidated Financial Statements for a reconciliation of the U.S. federal statutory income tax rate to the consolidated effective income tax rate.

Income and Income Per Share

(in millions, except per share)	2021	2020	Change	% Change	2019
Net income	**$ 99.9**	$ 63.4	$ 36.5	57.6 %	$ 158.4
Net income per common share:					
Basic	**$ 1.96**	$ 1.25	$ 0.71	56.8 %	$ 3.09
Diluted	**$ 1.96**	$ 1.24	$ 0.72	58.1 %	$ 3.07
Weighted average common shares outstanding:					
Basic	**50.9**	50.9	—	0.1 %	51.2
Diluted	**51.1**	51.1	—	— %	51.6

Basic and diluted net income per common share increased for 2021 as compared to 2020 due to the increase in net income year over year. Basic and diluted weighted average common shares outstanding were consistent year over year and were only slightly impacted by the repurchase of 396,000 and 100,000 shares during 2020 and 2021, respectively, as part of the Company's publicly announced Repurchase Program as well as the issuance of additional shares for employee stock plans.

Financial Performance by Business Segment

Industrial

($ in millions)	2021	2020	$ Change	% Change	2019
Sales	**$ 896.5**	$ 770.1	$ 126.4	16.4 %	$ 938.5
Operating profit	**97.7**	66.6	31.1	46.8 %	114.0
Operating margin	**10.9 %**	8.6 %			12.1 %

Sales at Industrial were $896.5 million in 2021, an increase of $126.4 million, or 16.4%, from 2020. Organic sales increased by $111.5 million, or 14.5%, during 2021, with increased volumes across each of the businesses, primarily driven by a recovery within industrial end markets and the lessened impacts of COVID-19 on a full-year basis. The deepening impacts of COVID-19 during the second half of the year, and more specifically a resurgence during the fourth quarter of 2021, caused additional pressure on Industrial. This pressure drove further semiconductor shortages, global supply chain sourcing constraints and labor shortages, with these factors continuing to impact recent automotive and broader industrial production. On a sequential basis, Industrial sales declined in the fourth quarter of 2021 relative to the third quarter of 2021, primarily a result of the factors noted above. Volumes within our broader transportation markets improved during 2021, albeit tempered by the semiconductor shortage. Sales within our medical markets remained solid in 2021, consistent with this market trend throughout the pandemic. On a full year basis, Automation business saw strong year-over-year organic sales growth, sequential sales declined in the fourth quarter relative to the third quarter, driven by the macroeconomic trends discussed above, although sequential orders in the fourth quarter increased slightly. Personal care and packaging end markets demonstrated softness on a year-over-year basis, although orders in both markets improved sequentially during the fourth quarter of 2021 relative to the third quarter. The Company completed the sale of its Seeger business on February 1, 2020, reducing sales by $5.3 million during the 2021 period relative to the 2020 period. The impact of foreign currency translation increased sales by approximately $20.2 million as the U.S. dollar weakened against foreign currencies.

Operating profit in 2021 at Industrial was $97.7 million, an increase of $31.1 million, or 46.8% from 2020. Operating profit benefited from the impact of increased organic sales volumes, partially offset by an increase in employee related costs, including incentive compensation, and investments in growth and innovation. Global sourcing also impacted the current period as supply chain constraints drove freight and raw material cost increases across the broader industry. The prior year period included $15.9 million of restructuring charges, primarily employee severance and other termination benefits, and $2.5 million of divestiture charges related to the completion of the Seeger sale. Operating margin increased from 8.6% in the 2020 period to 10.9% in the 2021 period, primarily driven by the absence of these restructuring and divestiture items.

Outlook:

In Industrial, management remains focused on generating organic sales growth through the introduction of new products and services and by leveraging the benefits of its diversified products and global industrial end-markets. This being the case, our end markets continue to recover from the ongoing impacts of COVID-19 and increasing supply chain constraints. Markets within our key regions of North America, Europe and China, although having demonstrated recovery throughout the first half of the year, softened during the second half as supply chain disruptions impacted demand and shipments across most Industrial businesses and regions. General industrial end markets have shown significant year-over-year improvement, although order rates declined sequentially during the fourth quarter of 2021. For overall industrial end-markets, the manufacturing Purchasing Managers' Index ("PMI") are above 50 in most regions. PMI within the United States and Europe, however, have shown slight deterioration since the third quarter of 2021, whereas China has remained stable. Global light vehicle production in 2021 was relatively flat as compared with 2020, largely a result of the impacts of the semiconductor shortage, tempering overall strength within the transportation markets. Production of light vehicles is being forecasted to meaningfully improve in 2022 although the semiconductor shortage may continue to impact near-term automotive builds. Management expects this shortage to continue into 2022, with an expectation that semiconductor chip supply will improve as the year goes on. Our customers and the markets we serve may impose emissions reduction or other environmental standards and requirements, including our conventional fuel-based automotive markets, thereby impacting sales volumes within our automotive end markets. Management also tracks closely the impact of pricing changes and lead times on raw materials and freight, given the increasing pressure of supply chain constraints. Management remains focused on labor constraints that impacted the business throughout 2021 and as we enter 2022. Within our Molding Solutions business, global medical markets remain healthy and are expected to remain favorable given the recent demands of COVID-19, an aging population and expanded medical applications. The automotive hot runner and tool and die markets remain strong following the release of projects with automotive original equipment manufacturers related to model launches, including new electric vehicles. Orders within the packaging market have improved on both a year-over-year and sequential basis. Sales volumes at certain of our businesses is dependent upon the need for equipment used to produce plastic products, which may be significantly influenced by the demand for plastic products, the capital investment needs of companies in the plastic injection molding and plastics processing industries, changes in technological advances and changes in laws or regulations such as those related to single-use plastics, product and packaging composition, and recycling. Automation end-markets continue to trend positively from a year-over-year standpoint. Although order activity declined sequentially during the second half of 2021, we continue to focus on further expansion into adjacent end-markets. As noted above, our sales were positively impacted by $20.2 million from fluctuations in foreign currencies. To the extent that the U.S. dollar fluctuates relative to other foreign currencies, our sales may be impacted relative to the prior year periods. The relative impact on operating profit is not expected to be as significant as the impact on sales as most of our businesses have expenses primarily denominated in local currencies, where their revenues reside, however operating margins may be impacted. Management is focused on sales growth through innovation, acquisition and expanding geographic reach. Strategic investments in new technologies, manufacturing processes and product development are expected to provide benefits over the long term and management continues to evaluate such opportunities.

The Company is focused on the proactive management of costs to mitigate the ongoing impacts of COVID-19 and the continuing risks of supply chain constraints on operating profit. Management also remains focused on strategic investments and new product and process introductions, as well as driving productivity by leveraging BES. The Company continues to manage its cost structure to align with the intake of orders and sales given remaining uncertainty within certain end-markets as we enter 2022. Management will continue to explore opportunities for additional cost savings, while working closely with vendors and customers as it relates to the timing of deliveries and pricing initiatives. It is anticipated that operating profit will continue to be impacted by changes in sales volume, mix and pricing, inflation, labor and freight costs, utilities and the levels of investments in growth and innovation that are made within each of the Industrial businesses. Operating profit may also be impacted by enactment of or changes in tariffs, trade agreements and trade policies that may affect the cost, lead times and/or availability of goods, including but not limited to, steel and aluminum. Costs associated with new product and process introductions, restructuring and other cost initiatives, strategic investments and the integration of acquisitions may negatively impact operating profit.

Aerospace

($ in millions)	**2021**	**2020**	**$ Change**	**% Change**	**2019**
Sales	**$ 362.4**	$ 354.3	$ 8.1	2.3 %	$ 552.6
Operating profit	**52.3**	56.8	(4.5)	(7.9)%	122.5
Operating margin	**14.4 %**	16.0 %			22.2 %

Aerospace recorded sales of $362.4 million in 2021, a 2.3% increase from 2020. Sales increased 5% within the OEM business and declined 3% within the Aftermarket Maintenance Repair and Overhaul ("MRO") and spare parts businesses

relative to the 2020 period. On a sequential basis, Aerospace sales improved in each sequential quarter, with Aftermarket sales demonstrating strong growth in the second half of 2021. Aftermarket sales, in fact, increased sequentially by 24% between the first and second half of 2021, with growth continuing to trend upwards as the business exited the year. The year-over-year increase in OEM sales was driven by growing narrow body airframe production including the return to flight of the Boeing 737 MAX. Sales within OEM, although having increased since the comparable 2020 period as well as sequentially during each of the 2021 quarters, continued to experience the impact of earlier reductions in engine and airframe build schedules, in addition to higher levels of inventory within the supply chain earlier in the year. The order schedules of our OEM customers stabilized throughout 2021 as customers continue to normalize their aircraft production schedules. Within Aftermarket, airline traffic and aircraft utilization have improved significantly during the second half of 2021, not withstanding the recent COVID-19 disruptions. The MRO business continued to demonstrate recovery as the distribution of vaccines increased, additional domestic health and travel restrictions were lifted and passenger traffic improved. Although Aerospace continues to demonstrate gradual signs of a recovery, a return to pre-COVID-19 levels is expected to take several years. See Outlook section below. Sales within the segment are largely denominated in U.S. dollars and therefore were not significantly impacted by changes in foreign currency.

Operating profit at Aerospace decreased 7.9% from 2020 to $52.3 million. The operating profit decrease resulted from the profit impact of decreased volumes within the higher margin Aftermarket businesses, partially offset by a volume increase at OEM, as discussed above. An increase in employee related costs, including incentive compensation, also impacted operating profit in the current period, partially offset by favorable productivity. The comparable prior year period included $2.3 million of restructuring charges, primarily employee severance and other termination benefits, whereas the 2021 period included $0.9 million of restructuring charges. Operating margin decreased from 16.0% in the 2020 period to 14.4% in the 2021 period, primarily a result of the impacts of the items discussed above.

Outlook:

Sales in the Aerospace OEM business are based on the general state of the aerospace market driven by the worldwide economy and are supported by its order backlog through participation in certain strategic commercial and defense-related engine and airframe programs. OEM sales and orders grew in 2021 relative to the similar 2020 period, although management expects orders to be tempered entering 2022 as customer aircraft production schedules continue to normalize, albeit at lower levels. The Company expects, however, that the OEM business will see recovery in demand for its manufactured components as aircraft production rates at Boeing and Airbus are increasing, though lower than pre-pandemic levels. Narrow body airframe production is ramping, whereas wide body airframe production remains under pressure. The duration and depth of the aerospace market disruptions remain uncertain at this time, however a full recovery to pre-pandemic levels is expected to take several years. Aerospace management continues to work with customers to evaluate engine and airframe build schedules, giving management the ability to react timely to such changes. Management is also working closely with suppliers to align raw material schedules with production requirements. Management also remains focused on labor constraints that impacted the business throughout 2021 and as we enter 2022. The business remains focused on executing long-term agreements while expanding our share of production on key programs. Backlog at OEM was $680.1 million at December 31, 2021, an increase of 18.9% since December 31, 2020, at which time backlog was $572.0 million. Approximately 40% of OEM backlog is expected to be recognized over the next 12 months. If COVID-19 continues to have a material impact on the aerospace industry, including our more significant OEM customers, it will continue to materially affect our Aerospace business and results of operations. The Aerospace OEM business may also be impacted by changes in the content levels on certain platforms, changes in customer sourcing decisions, adjustments to customer inventory levels, commodity and labor availability and pricing, vendor sourcing capacity and the use of alternate materials. Additional impacts may include the redesign of parts, quantity of parts per engine, cost schedules agreed to under contract with the engine and airframe manufacturers, as well as the pursuit and duration of new programs. Fluctuations in fuel costs and potential changes in regulatory requirements could impact airlines' decisions on maintaining, deferring or canceling new aircraft purchases, in part based on the value associated with new fuel efficient technologies and targets established by airlines to reduce greenhouse gas emissions.

COVID-19 continues to impact our Aerospace Aftermarket businesses. Reduced aircraft utilization, increased levels of aircraft removed from service and reduced airline profitability are expected to continue to impact our business in the mid-term. The Aftermarket business has, however, showed strong signs of a recovery during 2021 as orders have sequentially increased during each quarter. Domestic and international passenger traffic improved, the distribution of vaccines increased and certain domestic health and travel restrictions were lifted. Travel restrictions, especially on an international basis, continue to impact wide body aircraft utilization and corresponding Aftermarket orders, although freight-related air traffic remains strong. Sales in the Aerospace Aftermarket business may continue to be impacted by inventory management and changes in customer sourcing, deferred or limited maintenance activity during engine shop visits and the use of surplus (used) material during the engine repair and overhaul process. Management believes that its Aerospace Aftermarket business continues to be competitively positioned based on well-established long-term customer relationships, including maintenance and repair contracts in the MRO

business and long-term Revenue Sharing Programs ("RSPs") and Component Repair Programs ("CRPs"). The MRO business may also be impacted by airlines that closely manage their aftermarket costs as engine performance and quality improves. Fluctuations in fuel costs and potential changes in regulatory requirements and their corresponding impacts on airline profitability and behaviors within the aerospace industry could also impact levels and frequency of aircraft maintenance and overhaul activities, and airlines' decisions on maintaining, deferring or canceling new aircraft purchases, in part based on the economics associated with new fuel efficient technologies.

Given the pressures on sales growth resulting from COVID-19, the Company remains focused on the proactive management of costs and improved productivity to mitigate continued pressure on operating profit. Certain cost savings actions taken in the prior year remain in effect and have been critical in partially offsetting the lower profit contribution of lower Aftermarket sales. Aerospace will continue to explore opportunities for additional productivity in 2022, including working closely with vendors and customers as it relates to the timing of deliveries and pricing initiatives. Management also remains focused on strategic investments and new product and process introductions. Driving productivity through the application of BES continues as a key initiative. Operating profit is expected to be affected by the impact of the changes in sales volume noted above, mix and pricing, particularly as they relate to the higher profit Aftermarket RSP spare parts business, and investments made in each of its businesses. Operating profits may also be impacted by potential changes in tariffs, trade agreements and trade policies that may affect the cost and/or availability of goods and labor constraints. Costs associated with new product and process introductions, the physical transfer of work to other global regions, additional productivity initiatives and restructuring activities may also negatively impact operating profit.

LIQUIDITY AND CAPITAL RESOURCES

Management assesses the Company's liquidity in terms of its overall ability to generate cash to fund its operating and investing activities. Of particular importance in the management of liquidity are cash flows generated from operating activities, capital expenditure levels, dividends, capital stock transactions, effective utilization of surplus cash positions overseas and adequate lines of credit. The Company currently maintains sufficient liquidity and will continue to evaluate ways to enhance its liquidity position as it navigates through the disrupted business environment that has resulted from COVID-19.

The Company believes that its ability to generate cash from operations in excess of its internal operating needs is one of its financial strengths. Management continues to focus on cash flow and working capital management, and anticipates that operating activities in 2022 will generate sufficient cash to fund operations. See additional discussion regarding currently available debt facilities below. The Company continues to invest within its businesses, with its estimate of 2022 capital spending to be approximately $60 million.

In October 2014, the Company entered into a Note Purchase Agreement (“Note Purchase Agreement”), among the Company and New York Life Insurance Company, New York Life Insurance and Annuity Corporation and New York Life Insurance and Annuity Corporation Institutionally Owned Life Insurance Separate Account, as purchasers, for the issuance of $100.0 million aggregate principal amount of 3.97% senior notes due October 17, 2024 (the “3.97% Senior Notes”). The 3.97% Senior Notes are senior unsecured obligations of the Company and pay interest semi-annually on April 17 and October 17 of each year at an annual rate of 3.97%. The 3.97% Senior Notes will mature on October 17, 2024 unless earlier prepaid in accordance with their terms. Subject to certain conditions, the Company may, at its option, prepay all or any part of the 3.97% Senior Notes in an amount equal to 100% of the principal amount of the 3.97% Senior Notes so prepaid, plus any accrued and unpaid interest to the date of prepayment, plus the Make-Whole Amount, as defined in the Note Purchase Agreement, with respect to such principal amount being prepaid. The Note Purchase Agreement contains customary affirmative and negative covenants that are similar to the covenants required under the Amended Credit Agreement, as discussed below. At December 31, 2021, the Company was in compliance with all covenants under the Note Purchase Agreement.

On October 8, 2020, the Company entered into the sixth amendment to its fifth amended and restated revolving credit agreement with Bank of America (the “Sixth Amendment”) and the first amendment to the Note Purchase Agreement with New York Life (the “First NPA Amendment” and, collectively with the Sixth Amendment, the "Amendments"). The Sixth Amendment maintained the borrowing availability of $1,000.0 million along with access to request an additional $200.0 million through an accordion feature. The Sixth Amendment and the First NPA Amendment provided for an increase in the Company’s maximum ratio of Consolidated Senior Debt, as defined, to Consolidated EBITDA, as defined, from 3.25 times (or, if a certain permitted acquisition above $150.0 million is consummated, 3.50 times) to 3.75 times in each case at the end of the four fiscal quarters, beginning with December 31, 2020, and regardless of whether a permitted acquisition, as defined, is consummated, providing additional financing flexibility and access to liquidity. Additionally, the Sixth Amendment requires the Company to maintain a maximum ratio of Consolidated Total Debt, as defined, to Consolidated EBITDA, of not more than 3.75 times in each case, at the end of the four fiscal quarters, beginning with December 31, 2020 and regardless of whether a permitted

acquisition, as defined, is consummated. Furthermore, the First NPA Amendment provides for (i) adjustments to the ratio of Consolidated Total Debt to Consolidated EBITDA to conform to a more restrictive total leverage ratio that may be required under the Sixth Amendment, (ii) an increase in the amount of allowable add-back for restructuring charges when calculating Consolidated EBITDA from $15.0 million to $25.0 million and (iii) a required fee payment equal to 0.50% per annum times the daily outstanding principal amount of the note during each of the four fiscal quarters, following the quarter ended December 31, 2020, if the Company's Senior Leverage Ratio, as defined, exceeds 3.25 times. In October 2020, the Company paid fees and expenses of $1.4 million in conjunction with executing the Amendments. Such fees have been deferred within Other Assets on the accompanying Consolidated Balance Sheet and are being amortized on the Consolidated Statements of Income.

On February 10, 2021, the Company and certain of its subsidiaries entered into the sixth amended and restated senior unsecured revolving credit agreement (the "Amended Credit Agreement") and retained Bank of America, N.A. as the Administrative Agent for the lenders. The Amended Credit Agreement maintains the $1,000.0 million of availability under the facility, while increasing the available borrowings under the accordion feature from $200.0 million to $250.0 million (aggregate availability of $1,250.0 million) and extends the maturity date through February 2026. The Amended Credit Agreement also adjusts the interest rate to either the Eurocurrency rate, as defined in the Amended Credit Agreement, plus a margin of 1.175% to 1.775% or the base rate, as defined in the Amended Credit Agreement, plus a margin of 0.175% to 0.775%, depending on the Company's leverage ratio at the time of the borrowing. Multi-currency borrowings, pursuant to the Amended Credit Agreement, bear interest at their respective interbank offered rate (i.e. Euribor) or 0.00% (higher of the two rates) plus a margin of between 1.175% and 1.775%. As with the earlier facility, the Company's borrowing capacity is limited by various debt covenants in the Amended Credit Agreement, as described further below. The Amended Credit Agreement required the Company to maintain a Senior Debt Ratio of not more than 3.75 times at the end of each fiscal quarter ending on or before September 30, 2021, after which the ratio reverted to 3.25 times (or, if a permitted acquisition above $150.0 million is consummated, 3.50 times at the end of each of the first four fiscal quarters ending after the consummation of any such acquisition). In addition, the Amended Credit Agreement requires the Company to maintain a Total Debt Ratio of not more than 3.75 for each fiscal quarter (or, if a permitted acquisition above $150.0 million is consummated, 4.25 times at the end of each of the first four fiscal quarters ending after the consummation of any such acquisition). A ratio of Consolidated EBITDA to Consolidated Cash Interest Expense, as defined, of not less than 4.25, is required at the end of each fiscal quarter. The Amended Credit Agreement also contemplates the potential replacement of LIBOR (as defined below) with a successor financing rate, pursuant to the intent of the United Kingdom's Financial Conduct Authority to phase out use of LIBOR. See additional discussion immediately below regarding the Company's ongoing evaluation related to this potential change in financing rates. The Company paid fees and expenses of $4.3 million in conjunction with executing the Amended Credit Agreement. Such fees have been deferred within Other assets on the Consolidated Balance Sheets and will be amortized into interest expense on the Consolidated Statements of Income through its maturity. The Company subsequently amended the Credit Agreement on October 11, 2021, defining certain applicable multi-currency borrowing rates that may be used as replacement rates for LIBOR, which is expected to be discontinued by reference rate reform. See Note 1 of the Consolidated Financial Statements, as well as discussion below.

The United Kingdom's Financial Conduct Authority, which regulates the London Interbank Offered Rate ("LIBOR"), announced its intent to phase out the use of LIBOR by December 31, 2021. The U.S. Federal Reserve, in conjunction with the Alternative Reference Rates Committee, a steering committee comprised of large U.S. financial institutions, identified the Secured Overnight Financing Rate ("SOFR") as its preferred benchmark alternative to U.S. dollar LIBOR. Published by the Federal Reserve Bank of New York, SOFR represents a measure of the cost of borrowing cash overnight, collateralized by U.S. Treasury securities, and is calculated based on directly observable U.S. Treasury-backed repurchase transactions. The Company's Amended Credit Agreement and corresponding interest rate swap are tied to LIBOR, with each maturing in February 2026, as noted above. In March 2021, the ICE Benchmark Association announced that it will extend the publication of overnight, 1, 3, 6 and 12 month LIBOR rates until June 30, 2023, while ceasing publication of all other LIBOR rates including 1 week and 2 month rates. The Company's Amended Credit Agreement was further amended in October 2021 to address the replacement of LIBOR, defining certain applicable multi-currency borrowing rates that may be used as a replacement. The Company is continuing to monitor the potential impact of the replacement of LIBOR, but does not anticipate a material impact on our business, financial condition, results of operations and cash flows.

At December 31, 2021, the Company was in compliance with all applicable covenants. The Company anticipates continued compliance under the Agreements in each of the next four quarters. The Company's most restrictive financial covenant is the Senior Debt Ratio, which required the Company to maintain a ratio of Consolidated Senior Debt to Consolidated EBITDA of not more than 3.25 times at December 31, 2021. The actual ratio at December 31, 2021 was 2.44 times, as defined.

In 2021, 2020 and 2019, the Company acquired 0.1 million shares, 0.4 million shares and 0.9 million shares of the Company's common stock, respectively, under the Repurchase Program at a cost of $5.2 million, $15.6 million and $50.3

million, respectively. Management will continue to evaluate additional repurchases based on prevailing market conditions, our liquidity requirements, contractual restrictions and other factors. See "Part II - Item 2 - Unregistered Sales of Equity Securities and Use of Proceeds".

Operating cash flow may be supplemented with external borrowings to meet near-term business expansion needs and the Company's current financial commitments. The Company has assessed its credit facilities in conjunction with the Amended Credit Facility and currently expects that its bank syndicate, comprised of 12 banks, will continue to support its recently executed Amended Credit Agreement, which matures in February 2026. At December 31, 2021, the Company had $504.7 million unused and available for borrowings under its $1,000.0 million Amended Credit Facility, subject to covenants in the Company's Amended Credit Agreement. At December 31, 2021, additional borrowings of $325.6 million of Total Debt including $201.7 million of Senior Debt would have been allowed under the financial covenants. The Company intends to use borrowings under its Amended Credit Agreement to support the Company's ongoing growth initiatives. The Company continues to analyze potential acquisition targets and end markets that meet our strategic criteria with an emphasis on proprietary, highly-engineered industrial technologies. The Company believes its credit facilities and access to capital markets, coupled with cash generated from operations, are adequate for its anticipated future requirements. The Company maintains communication with its bank syndicate as it continues to monitor its cash requirements and available costs of borrowing within the market.

The Company had no borrowings under short-term bank credit lines at December 31, 2021.

The Company entered into an interest rate swap agreement (the "2017 Swap") on April 28, 2017, with one bank, which converted the interest on the first $100.0 million of the Company's one-month LIBOR-based borrowings from a variable rate plus the borrowing spread to a fixed rate of 1.92% plus the borrowing spread. The 2017 Swap expired on January 31, 2022. On March 24, 2021, the Company entered into a new interest rate swap agreement (the "2021 Swap") with this same bank that commenced on January 31, 2022 and that converted the interest on the first $100.0 million of the Company's one-month LIBOR-based borrowings from a variable rate plus the borrowing spread to a fixed rate of 1.17% plus the borrowing spread. The 2021 Swap will expire on January 30, 2026. These interest rate swap agreements (the "Swaps") remain in place at December 31, 2021 and are accounted for as cash flow hedges. At December 31, 2021, the Company's total borrowings were comprised of approximately 34% fixed rate debt and 66% variable rate debt. At December 31, 2020, the Company's total borrowings were comprised of approximately 30% fixed rate debt and 70% variable rate debt.

The funded status of the Company's pension plans is dependent upon many factors, including actual rates of return that impact the fair value of pension assets and changes in discount rates that impact projected benefit obligations. The unfunded status of the pension plans decreased from $55.0 million at December 31, 2020 to $22.3 million at December 31, 2021 as the fair value of the pension plan assets increased and the projected benefit obligations ("PBOs") decreased, following an update to certain actuarial assumptions. The Company recorded $29.8 million of non-cash after-tax increases in stockholders equity (through other non-owner changes to equity) when recording the current year adjustments for changes in the funded status of its pension and postretirement benefit plans as required under accounting for defined benefit and other postretirement plans. This increase in stockholders equity resulted primarily from changes in actuarial assumptions, primarily an increase in discount rates, the amortization of actuarial losses and prior service costs recorded earlier and favorable variances between expected and actual returns on pension plan assets.

In 2021, the Company made no discretionary contributions to its U.S Qualified pension plans. The Company expects to contribute approximately $4.6 million to its various defined benefit pension plans in 2022. No discretionary contributions to the U.S. Qualified pension plans are currently planned in 2022. See Note 12 of the Consolidated Financial Statements.

As noted above, the U.S. government enacted the Act on December 22, 2017. The Company completed its computation of the Transition Tax as required pursuant to SAB 118 in 2018, resulting in a final net Transition Tax expense of $86.7 million. The Company elected to pay the Transition Tax over the allowed eight-year period. The installment payments for the Transition Tax are not expected to have a material impact on the liquidity or capital resources of the Company. The Company expects to make the payments through the use of available cash or borrowings under the Amended Credit Agreement.

The Company completed the sale of the Seeger business to Kajo Neukirchen Group effective February 1, 2020. Gross proceeds received were 39.0 million Euros ($42.9 million) after consideration of post-closing adjustments, which were made during 2020, pursuant to the terms of the SPA. The Company yielded net cash proceeds of $36.1 million after consideration of cash sold and transaction costs. Resulting tax charges of $4.2 million were recognized in the first quarter of 2020 following the completion of the sale. The Company utilized the proceeds from the sale to reduce debt under the Amended Credit Agreement.

At December 31, 2021, the Company held $102.9 million in cash and cash equivalents, the majority of which was held by foreign subsidiaries. These amounts have no material regulatory or contractual restrictions and, on a long term basis, are expected to primarily fund international investments. The Act changed the impact of U.S taxation on foreign distributions. The Company is continuously evaluating its position regarding the potential repatriation of overseas cash. The evaluation of potential repatriation is dependent upon several variables, including foreign taxation of dividends and the impact of withholding tax. The Company repatriated $68.3 million to the U.S. during 2021.

The Company's efforts to comply with numerous federal, state and local laws and regulations applicable to its business and products often results in capital expenditures. The Company makes capital expenditures to design and upgrade its aerospace and industrial products to comply with or exceed standards applicable to the industries we serve. The Company's ongoing HSE compliance program also results in capital expenditures. Regulatory and HSE considerations are a part of significant capital expenditure decisions; however, expenditures during 2021 related solely to regulatory compliance were not material.

Any future acquisitions are expected to be financed through cash, borrowings and equity, or a combination thereof. We may from time to time seek to retire or repurchase our outstanding debt through cash purchases and/or exchanges for equity securities, in open market purchases, under a Rule 10b5-1 trading plan, privately negotiated transactions or otherwise. Such repurchases or exchanges, if any, will depend on prevailing market conditions, our liquidity requirements, contractual restrictions and other factors.

Cash Flow

($ in millions)	**2021**	**2020**	**$ Change**	**% Change**	**2019**
Operating activities	**$ 167.8**	$ 215.5	$ (47.7)	(22.1)%	$ 248.3
Investing activities	**(29.8)**	(4.2)	(25.6)	NM	(62.2)
Financing activities	**(114.7)**	(219.7)	105.0	47.8 %	(192.0)
Exchange rate effect	**(2.9)**	6.1	(8.9)	NM	(1.0)
Increase (decrease) in cash, cash equivalents and restricted cash	**$ 20.4**	$ (2.3)	$ 22.8	NM	$ (6.9)

NM – Not meaningful

Operating activities provided $167.8 million in 2021 compared to $215.5 million in 2020. Operating cash flows in the 2021 period were positively impacted by improved operating results compared to the 2020 period; however, this was offset by the absence of $99.6 million of cash generated by working capital in the 2020 period which was driven by a reduction in accounts receivable. The 2021 period includes a use of cash for working capital of $3.2 million.

Investing activities used $29.8 million in 2021 and $4.2 million in 2020. Net cash proceeds of $36.1 million from the sale of the Seeger business are included in investing activities for the 2020 period. See Note 2 of the Consolidated Financial Statements. In 2021, investing activities included capital expenditures of $34.1 million compared to $40.7 million in 2020. The Company expects capital spending in 2022 to approximate $60 million. Capital expenditures relate to both maintenance and support of growth initiatives, which include the purchase of equipment to support new products and services, and are expected to be funded primarily through cash flows from operations.

Cash used by financing activities in 2021 included a net decrease in borrowings of $67.4 million compared to a net decrease of $174.2 million in 2020. Proceeds from the issuance of common stock were $1.4 million and $2.0 million in 2021 and 2020, respectively. In 2021, the Company repurchased 0.1 million shares of the Company's stock at a cost of $5.2 million compared with the purchase of 0.4 million shares at a cost of $15.6 million in 2020. Total cash used to pay dividends was $32.4 million in both the 2021 and 2020 periods. Withholding taxes paid on stock issuances were $1.4 million in the 2021 period and $3.4 million in the 2020 period. Other financing cash flows during 2021 and 2020 included $0.8 million of net cash payments and $5.6 million of net cash proceeds, respectively, related to the settlement of foreign currency hedges related to intercompany financings. Other financing cash flows in the 2021 period also included $4.3 million of payments made in conjunction with executing the Amended Credit Agreement and $4.2 million of payments related to the residual interest in a subsidiary. Other financing cash flows in the 2020 period also included $1.4 million of payments made in conjunction with executing amendments to the Amended Credit Agreement and the Note Purchase Agreement.

Debt Covenants

As noted above, borrowing capacity is limited by various debt covenants in the Company's debt agreements. Following is a reconciliation of Consolidated EBITDA, a key metric in the debt covenants, to the Company's net income (in millions):

	2021
Net income	$ 99.9
Add back:	
Interest expense	16.2
Income taxes	27.9
Depreciation and amortization	92.2
Adjustment for non-cash stock based compensation	11.4
Other adjustments	0.1
Consolidated EBITDA, as defined within the Amended Credit Agreement	$ 247.8
Consolidated Senior Debt, as defined, as of December 31, 2021	$ 603.7
Ratio of Consolidated Senior Debt to Consolidated EBITDA	2.44
Maximum	3.25
Consolidated Total Debt, as defined, as of December 31, 2021	$ 603.7
Ratio of Consolidated Total Debt to Consolidated EBITDA	2.44
Maximum	3.75
Consolidated Cash Interest Expense, as defined, as of December 31, 2021	$ 16.2
Ratio of Consolidated EBITDA to Consolidated Cash Interest Expense	15.29
Minimum	4.25

The Amended Credit Agreement allows for certain adjustments within the calculation of the financial covenants. Other adjustments consist primarily of restructuring charges, due diligence and transaction expenses and net gains on the sale of assets as permitted under the Amended Credit Agreement. The Company's financial covenants are measured as of the end of each fiscal quarter. At December 31, 2021, additional borrowings of $325.6 million of Total Debt including $201.7 million of Senior Debt would have been allowed under the covenants. Senior Debt includes primarily the borrowings under the Amended Credit Agreement, the 3.97% Senior Notes and the borrowings under the lines of credit. The Company's unused committed credit facilities at December 31, 2021 were $504.7 million; however, the borrowing capacity was limited by the debt covenants to $325.6 million of Total Debt and $201.7 million of Senior Debt at December 31, 2021.

Contractual Obligations and Commitments

At December 31, 2021, the Company had the following contractual obligations and commitments:

($ in millions)	Total	Less than 1 Year	1-3 Years	3-5 Years	More than 5 Years
Long-term debt obligations [1]	$ 601.8	$ 1.8	$ 103.6	$ 496.4	$ —
Estimated interest payments under long-term obligations [2]	42.5	11.5	22.8	8.2	—
Operating lease obligations [3]	33.1	11.7	12.1	2.8	6.5
Purchase obligations [4]	251.0	225.8	23.1	1.5	0.6
Expected pension contributions [5]	4.6	4.6	—	—	—
Expected benefit payments – other postretirement benefit plans [6]	21.7	2.9	5.2	4.5	9.1
Long-term U.S. Tax Reform obligations[7]	52.1	—	30.4	21.7	—
Total	$ 1,006.8	$ 258.3	$ 197.2	$ 535.1	$ 16.2

(1) Long-term debt obligations represent the required principal payments under such agreements. As noted above, the Company entered into an Amended Credit Agreement on February 10, 2021, extending the maturity of the $1,000.0 million facility from February 2022 to February 2026.

(2) Interest payments under long-term debt obligations have been estimated based on the borrowings outstanding and market interest rates as of December 31, 2021. The Amended Credit Agreement extends the maturity of the facility and the timing of corresponding interest payments through February 2026.
(3) The Company's operating lease payments included herein reflect the future minimum undiscounted fixed lease payments, which represent the basis for calculating the Company's operating lease liabilities as of December 31, 2021. Refer to Note 19 of the Consolidated Financial Statements.
(4) The amounts do not include purchase obligations reflected as current liabilities on the consolidated balance sheet. The purchase obligation amount includes all outstanding purchase orders as of the balance sheet date as well as the minimum contractual obligation or termination penalty under other contracts.
(5) The amount included in "Less Than 1 Year" reflects anticipated contributions to the Company's various pension plans. Anticipated contributions beyond one year are not determinable.
(6) Amounts reflect anticipated benefit payments under the Company's other postretirement benefit plans based on current actuarial assumptions. Expected benefit payments, as presented above, do not extend beyond 2031. See Note 12 of the Consolidated Financial Statements.
(7) Amounts reflect anticipated long-term payments related to the Tax Cuts and Jobs Act that was enacted on December 22, 2017. Payments are allowed over an eight-year period. See Note 14 of the Consolidated Financial Statements. The amount payable in 2022 is included within accrued liabilities on the Consolidated Balance Sheets.

The above table does not reflect unrecognized tax benefits as the timing of the potential payments of these amounts cannot be determined. See Note 14 of the Consolidated Financial Statements.

OTHER MATTERS

Inflation

Inflation generally affects the Company through its costs of labor, equipment, raw materials, freight and utilities. The Company strives to offset these items by price increases, commodity price escalator provisions, operating improvements, and other cost-saving initiatives. In certain end markets, implementing price increases may be difficult and there is no assurance that the Company will be successful. From time to time, the Company may encounter difficulties in obtaining certain raw materials or components necessary for production due to supply chain constraints and logistical challenges, which may also negatively impact the pricing of materials and components sourced or used by the Company. Beginning in 2021 and into 2022, for example, raw material availability and inflationary pressures have impacted certain of our business. See "Part I, Item 1A. Risk Factors.

Critical Accounting Estimates

The preparation of financial statements requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Significant accounting policies are disclosed in Note 1 of the Consolidated Financial Statements. The most significant areas involving management judgments and estimates are described below. Actual results could differ from such estimates.

Inventory Valuation: Inventories are valued at the lower of cost, determined on a first-in, first-out basis, or net realizable value. The primary components of cost included in inventories are raw material, labor and overhead. Provisions are made to reduce excess or obsolete inventories to their estimated net realizable value. The process for evaluating the value of excess and obsolete inventory often requires the Company to make subjective judgments and estimates concerning future sales levels, quantities and prices at which such inventory will be sold in the normal course of business and estimated costs. Estimates of excess and obsolete inventory may differ from actual results due to changes in market value, channels of distribution, customer preferences and overall economic and market conditions. Accelerating the disposal process or changes in estimates based on future sales potential or estimated costs may necessitate future adjustments to these provisions.

Revenue recognition: Revenue is recognized by the Company when control of the product or solution is transferred to the customer. Control is generally transferred when products are shipped or delivered to customers, title is transferred, the significant risks and rewards of ownership have transferred, the Company has rights to payment and rewards of ownership pass to the customer. Customer acceptance may also be a factor in determining whether control of the product has transferred. Although revenue is generally transferred at a point in time, a certain portion of businesses with customized products or contracts in which the Company performs work on customer-owned assets requires the use of an over time recognition model as certain contracts meet one or more of the established criteria pursuant to the accounting standards governing revenue recognition. Also, service revenue is recognized as control transfers, which is concurrent with the services being performed. The estimation of both total revenue and cost at completion includes a number of variables and requires significant judgement. A portion of our Aerospace OEM business as well as a portion of our Molding Solutions Products business has an estimate at completion process in which management reviews the progress and execution of our performance obligations for significant contracts with revenue recognized under an over time model. Factors considered in these estimates include, but are not limited to, performance under the contract, progress towards completion, identified risks and opportunities, sourcing determinations

and related changes in estimates of costs to be incurred. The potential exists that there will be a material change in estimates or assumptions used to calculate revenue recognized under an over time model and as a result changes to these estimates could have a material adverse effect on our results of operations. Adjustments to net sales, cost of sales and the related impact to operating income are recognized as necessary. Revenue recognized from performance obligations satisfied in previous periods was not material in 2021, 2020 and 2019. See Note 3 of the Consolidated Financial Statements.

Business Acquisitions, Intangible Assets and Goodwill: Assets and liabilities acquired in a business combination are recorded under the acquisition method of accounting at their estimated fair values at the dates of acquisition. At December 31, 2021, the Company had $955.4 million and $271.1 million of goodwill and identifiable intangible assets related to acquisitions, respectively. Goodwill represents the cost of acquisitions in excess of fair values assigned to the underlying identifiable net assets of acquired businesses. Identifiable intangible assets acquired in business acquisitions include customer relationships, patents and technology and trademarks/trade names. The fair value of acquired customer relationship intangibles was determined as of the acquisition dates based on estimates and judgments regarding expectations for the future after-tax cash flows arising from customer relationships that existed on the acquisition date over their estimated lives, less a contributory assets charge, all of which is discounted to present value using an appropriate discount rate. The fair value of the patents and technology and trademark/trade name intangible assets were determined utilizing the relief from royalty method which is a form of the income approach. Under this method, an after-tax royalty rate based on market royalty rates is applied to projected revenue associated with the patents/technology and trademark/trade name and discounted to present value using an appropriate discount rate. See Note 6 of the Consolidated Financial Statements.

Goodwill and indefinite-lived intangible assets are subject to impairment testing annually or more frequently if an event or change in circumstances indicates that the fair value of a reporting unit has been reduced below its carrying value. Management completes its annual impairment assessments during the second quarter of each year as of April 1. The Company utilizes the option to first assess qualitative factors to determine whether it is necessary to perform the Step 1 quantitative goodwill impairment test in accordance with applicable accounting standards. Under the qualitative assessment, management considers relevant events and circumstances including but not limited to macroeconomic conditions, industry and market considerations, overall unit performance and events directly affecting a unit. If the Company determines that the Step 1 quantitative impairment test is required, management estimates the fair value of the reporting unit primarily using the income approach, which reflects management's cash flow projections, and also evaluates the fair value using the market approach. Inherent in management's development of cash flow projections are assumptions and estimates, including those related to future earnings and growth rates and the weighted average cost of capital. The Company compares the fair value of the reporting unit with the carrying value of the reporting unit. If the fair values were to fall below the carrying values, the Company would recognize a non-cash impairment charge to income from operations for the amount by which the carrying amount of any reporting unit exceeds the reporting unit's fair value, assuming the loss recognized does not exceed the total amount of goodwill for the reporting unit. Based on our second quarter assessment, the estimated fair value of the Automation reporting unit, which represents the October 2018 acquisition of Gimatic, exceeded its carrying value while the estimated fair value of each of the remaining reporting units significantly exceeded their carrying values. There was no goodwill impairment at any reporting units in 2021. Based on our assessments, a ten percentage point decrease in the fair value of any reporting unit would not impact our conclusion that goodwill was not impaired. Many of the factors used in assessing fair value are outside the control of management, and these assumptions and estimates can change in future periods as a result of both Company-specific and overall economic conditions, including the impacts of COVID-19. Management's quantitative assessment includes a review of the potential impacts of current and projected market conditions from a market participant's perspective on reporting units' projected cash flows, growth rates and cost of capital to assess the likelihood of whether the fair value would be less than the carrying value. The Company also completed its annual impairment testing of its trade names, indefinite-lived intangible assets, in the second quarter of 2021 and determined that there were no impairments.

The Company executed an SPA to sell Seeger in December 2019 and subsequently classified the assets and liabilities of Seeger as "held for sale" on the Consolidated Balance Sheet as of December 31, 2019. Pursuant to the required accounting guidance, the Company allocated $15.0 million of goodwill from the Engineered Components ("EC") reporting unit to Seeger based on the estimated relative fair values of the business to be disposed of and the portion of the reporting unit that will be retained. The Company subsequently recorded a non-cash impairment charge of $5.6 million related to the goodwill that was allocated to Seeger. The impairment charge was recorded within Selling and Administrative expenses on the Consolidated Statement of Income for the period ended December 31, 2019. The Company assessed the goodwill within the remaining EC reporting unit and determined that there was no further impairment. See Note 2 of the Consolidated Financial Statements.

The Company assesses the impairment of the identifiable finite-lived intangible assets subject to amortization whenever significant events or significant changes in circumstances indicate that their carrying value may not be recoverable. The Company did not identify any impairments related to such intangible assets during 2021.

Aerospace Aftermarket Programs: The Company participates in aftermarket RSPs under which the Company receives an exclusive right to manufacture and supply designated aftermarket parts over the life of the related aircraft engine program to our customer, GE. As consideration, the Company has paid participation fees, which are recorded as intangible assets. The carrying value of these intangible assets was $147.5 million at December 31, 2021. The Company records amortization of the related asset as sales dollars are being earned based on a proportional sales dollar method. Specifically, this method amortizes each asset as a reduction to revenue based on the proportion of sales under a program in a given period to the estimated aggregate sales dollars over the life of that program which reflects the pattern in which economic benefits are realized.

The Company also participates in CRPs with GE which provide for, among other items, the right to sell certain aftermarket component repair services for CFM56, CF6, CF34 and LM engines directly to other customers over the life of the engine program as one of a few GE licensed suppliers. In addition, the CRPs extended certain existing contracts under which the Company provides these services directly to GE. Our total investments in CRPs as of December 31, 2021 equaled $111.8 million, all of which have been paid. At December 31, 2021, the carrying value of the CRPs was $76.2 million. The Company recorded the CRP payments as an intangible asset which is recognized as a reduction of sales over the remaining life of these engine programs based on the estimated sales over the life of such programs. This method reflects the pattern in which the economic benefits of the CRPs are realized.

The recoverability of each asset is subject to significant estimates about future revenues related to the programs' aftermarket parts and services. The Company evaluates these intangible assets for recoverability and updates amortization rates on an agreement by agreement basis for the RSPs and on an individual asset basis for the CRPs. The assets are reviewed for recoverability periodically including whenever events or changes in circumstances indicate that their carrying amount may not be recoverable. Annually, the Company evaluates the remaining life of these assets to determine whether events and circumstances warrant a revision to the remaining periods of amortization. Management updates revenue projections, which include a comparison of actual experience against projected revenue and industry projections. The potential exists that actual revenues will not meet expectations due to a change in market conditions, including, for example, the replacement of older engines with new, more fuel-efficient engines or the Company's ability to capture additional production share within the aftermarket business. A shortfall in future revenues may indicate a triggering event requiring a write down or further evaluation of the recoverability of the assets or require the Company to accelerate amortization expense prospectively dependent on the level of the shortfall. Management considered the impacts of the COVID-19 pandemic on the broader aerospace end markets during its evaluation of these intangible assets in 2021. The Company has not identified any impairment of these assets, although changes in projected RSP and CRP revenue has impacted amortization rates that will be applied prospectively. See Note 6 of the Consolidated Financial Statements.

Pension and Other Postretirement Benefits: Accounting policies and significant assumptions related to pension and other postretirement benefits are disclosed in Note 12 of the Consolidated Financial Statements. As discussed further below, the significant assumptions that impact pension and other postretirement benefits include discount rates, mortality rates and expected long-term rates of return on invested pension assets.

The Company selected the expected long-term rate of return of its U.S. defined benefit plans based on consideration of historical and projected rates of return on the weighted target asset mix of our pension investments. The target mix reflects a 65% equity investment target and a 35% target for fixed income and cash investments (in aggregate). The equity investment of 65% is more heavily weighted on global equity investment targets, rather than U.S. targets. The historical rates of return for the Company's defined benefit plans were calculated based upon compounded average rates of return of published indices. Management selected a long-term expected rate of return on its U.S. pension assets of 7.25%. The long-term rates of return for non-U.S. plans were selected based on actual historical rates of return of published indices that reflect the plans' target asset allocations.

The discount rate used for the Company's U.S. pension plans reflects the rate at which the pension benefits could be effectively settled. At December 31, 2021, the Company selected a discount rate of 2.95% based on a bond matching model for its U.S. pension plans. Market interest rates have increased in 2021 as compared with 2020 and, as a result, the discount rate used to measure pension liabilities increased from 2.65% at December 31, 2020. The discount rates for non-U.S. plans were selected based on highly rated long-term bond indices and yield curves that match the duration of the plan's benefit obligations.

A one-quarter percentage point change in the assumed long-term rate of return on the Company's U.S. pension plans as of December 31, 2021 would impact the Company's 2022 pre-tax income by approximately $1.0 million. A one-quarter percentage point decrease in the discount rate on the Company's U.S. pension plans as of December 31, 2021 would also

decrease the Company's 2022 pre-tax income by approximately $1.1 million. The Company reviews these and other assumptions at least annually.

The Company recorded $29.8 million of non-cash after-tax increases in stockholders equity (through other non-owner changes to equity) when recording the current year adjustments for changes in the funded status of its pension and postretirement benefit plans as required under accounting for defined benefit and other postretirement plans. This increase in stockholders equity resulted primarily from changes in actuarial assumptions, primarily an increase in discount rate, the amortization of actuarial losses and prior service costs recorded earlier (including curtailment and settlement charges resulting from actions taken during 2021) and favorable variances between expected and actual returns on pension plan assets. During 2021, the fair value of the Company's pension plan assets increased by $7.2 million and the projected benefit obligation decreased by $25.6 million. The decrease in the projected benefit obligation included payments of benefits to plan participants of $29.5 million, a $14.5 million (pre-tax) decrease due to actuarial gains resulting primarily from a change in the discount rates used to measure pension liabilities partially offset by annual service and interest costs of $6.5 million and $12.7 million, respectively. Changes to other actuarial assumptions in 2021 did not have a material impact on our stockholders equity or projected benefit obligation. Actual pre-tax gains on total pension plan assets were $33.1 million compared with an expected pre-tax return on pension assets of $27.9 million. Pension expense for 2022 is expected to decrease from $7.8 million in 2021 to $3.8 million.

Income Taxes: As of December 31, 2021, the Company had recognized $22.0 million of deferred tax assets, net of valuation reserves. The realization of these benefits is dependent, in part, on the amount and timing of future taxable income in jurisdictions where the deferred tax assets reside. For those jurisdictions where the expiration dates of tax loss carryforwards or the proposed operating results indicate that realization is unlikely, a valuation allowance is provided. Management currently believes that sufficient taxable income should be earned in the future to realize the deferred tax assets, net of valuation allowances recorded.

The valuation of deferred tax assets requires significant judgment. Management's assessment that the deferred tax assets will be realized represents its estimate of future results; however, there can be no assurance that such expectations will be met. Changes in management's assessment of achieving sufficient future taxable income could materially increase the Company's tax expense and could have a material adverse impact on the Company's financial condition and the results of operations.

Additionally, the Company is exposed to certain tax contingencies in the ordinary course of business and records those tax liabilities in accordance with the guidance for accounting for uncertain tax positions. For tax positions where the Company believes it is more likely than not that a tax benefit will be sustained, the Company has recorded the largest amount of tax benefit with a greater than 50% likelihood of being realized. For those income tax positions where it is more likely than not that a tax benefit will not be sustained, no tax benefit is recognized in the financial statements. A change in judgement that results in subsequent recognition, derecognition or change in measurement of a tax position taken in a earlier period will be recognized in the period that the change occurred. We do not anticipate a significant change in our unrecognized tax benefits within the next twelve months. The Company or its subsidiaries file income tax returns in the U.S. federal jurisdiction, and various state and foreign jurisdictions. With a few exceptions, tax years remaining open to examination in significant foreign jurisdictions include tax years 2016 and forward and for the U.S. include tax years 2016 and forward. See Note 14 of the Consolidated Financial Statements. A one percentage point increase/decrease in our tax rate would have affected our 2021 earnings by $1.3 million. Changes in judgement related to tax positions taken in previous periods was not material in 2021, 2020 and 2019.

As noted above, a significant portion of revenue is generated by foreign locations. Current guidance requires the recognition of a tax liability under the assumption that foreign earnings will be repatriated in the future, unless the Company can assert that the earnings are indefinitely reinvested. Management's annual assessment in determining whether the earnings are indefinitely reinvested is based on an analysis of U.S. cash requirements and working capital requirements of the foreign operations, including capital expenditures, combined with any limitations, such as dividend restrictions or local law limits, which would limit possible repatriation. The Company has recognized a deferred tax liability for U.S. taxes of $0.2 million on $3.5 million of undistributed earnings of its international subsidiaries, earned before 2017 and the application of the Transition Tax implemented by the Act. All remaining earnings are considered indefinitely reinvested as defined per the indefinite reversal criterion within the accounting guidance for income taxes.

Stock-Based Compensation: The Company accounts for its stock-based employee compensation plans at fair value on the grant date and recognizes the related cost in its consolidated statement of income in accordance with accounting standards related to share-based payments. The fair values of stock options are estimated using the Black-Scholes option-pricing model based on certain assumptions. The fair values of service and performance based share awards are determined based on the fair market value of the Company's stock price on the grant date. The fair values of market based performance share awards are

determined using the Monte Carlo valuation method. Compensation expense is based on fair value and is recorded each period based upon a probability assessment of achieving performance goals. See Note 13 of the Consolidated Financial Statements.

EBITDA

Earnings before interest expense, income taxes, and depreciation and amortization ("EBITDA") for 2021 was $235.1 million compared to $205.1 million in 2020. EBITDA is a measurement not in accordance with generally accepted accounting principles ("GAAP"). The Company defines EBITDA as net income plus interest expense, income taxes, and depreciation and amortization which the Company incurs in the normal course of business. The Company does not intend EBITDA to represent cash flows from operations as defined by GAAP, and the reader should not consider it as an alternative to net income, net cash provided by operating activities or any other items calculated in accordance with GAAP, or as an indicator of the Company's operating performance. The Company's definition of EBITDA may not be comparable with EBITDA as defined by other companies. The Company believes EBITDA is commonly used by financial analysts and others in the industries in which the Company operates and, thus, provides useful information to investors. Accordingly, the calculation has limitations depending on its use.

Following is a reconciliation of EBITDA to the Company's net income (in millions):

	2021	2020
Net income	**$ 99.9**	$ 63.4
Add back:		
Interest expense	**16.2**	15.9
Income taxes	**27.9**	38.1
Depreciation and amortization	**91.1**	87.7
EBITDA	**$ 235.1**	$ 205.1

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. The Company’s financial results could be impacted by changes in interest rates and foreign currency exchange rates, and commodity price changes. The Company uses financial instruments to hedge its exposure to fluctuations in interest rates and foreign currency exchange rates. The Company does not use derivatives for speculative or trading purposes.

The Company’s long-term debt portfolio consists of fixed-rate and variable-rate instruments and is managed to reduce the overall cost of borrowing while also minimizing the effect of changes in interest rates on near-term earnings. The Company’s primary interest rate risk is derived from its outstanding variable-rate debt obligations. Financial instruments have been used by the Company to hedge its exposures to fluctuations in interest rates.

In April 2017, the Company entered into an interest rate swap agreement (the "2017 Swap") transacted with one bank which converted the interest on the first $100.0 million of borrowings from a variable rate plus the borrowing spread to a fixed rate of 1.92% plus the borrowing spread. The 2017 Swap expired on January 31, 2022. On March 24, 2021, the Company entered into a new interest rate swap agreement (the "2021 Swap") with this same bank that commenced on January 31, 2022 and converted the interest on the first $100.0 million of the Company's one-month LIBOR-based borrowings from a variable rate plus the borrowing spread to a fixed rate of 1.17% plus the borrowing spread. The 2021 Swap will expire on January 30, 2026. The result of a hypothetical 100 basis point increase in the interest rate on the average bank borrowings of the Company’s variable-rate debt during 2021 would have reduced annual pretax profit by $4.7 million.

At December 31, 2021, the fair value of the Company’s fixed-rate debt was $112.4 million, compared with its carrying amount of $106.5 million. The Company estimates that a 100 basis point decrease in market interest rates at December 31, 2021 would have increased the fair value of the Company's fixed rate debt to $115.4 million.

The Company has manufacturing, sales and distribution facilities around the world and thus makes investments and conducts business transactions denominated in various currencies. The Company is exposed primarily to financial instruments denominated in currencies other than the functional currency at its international locations. A 10% adverse change in foreign currencies relative to the U.S dollar at December 31, 2021 would have resulted in a $3.8 million loss in the fair value of those financial instruments. At December 31, 2021, the Company held $102.9 million of cash and cash equivalents, the majority of which is held by foreign subsidiaries.

Foreign currency commitments and transaction exposures are managed at the operating units as an integral part of their businesses in accordance with a corporate policy that addresses acceptable levels of foreign currency exposures.

Additionally, to reduce foreign currency exposure, management generally maintains the majority of foreign cash and short-term investments in functional currency and uses forward currency contracts for non-functional currency denominated monetary assets and liabilities and anticipated transactions in an effort to reduce the effect of the volatility of changes in foreign exchange rates on the income statement. Management assesses the strength of currencies in certain countries such as Brazil and Mexico, relative to the U.S. dollar, and may elect during periods of local currency weakness to invest excess cash in U.S. dollar-denominated instruments.

The Company’s exposure to commodity price changes relates to certain manufacturing operations that utilize high-grade steel spring wire, stainless steel, titanium, Inconel, Hastelloys and other specialty metals. The Company attempts to manage its exposure to price increases through its procurement and sales practices. See “Part I - Item 1A - Risk Factors” for additional disclosure related to this market risk.

The results of the Company could be impacted by changes in tariffs, trade agreements or other trade restrictions imposed or agreed to by the U.S. or foreign governments.

Item 8. Financial Statements and Supplementary Data

BARNES GROUP INC.
CONSOLIDATED STATEMENTS OF INCOME
(Dollars in thousands, except per share data)

	Years Ended December 31,		
	2021	**2020**	**2019**
Net sales	**$ 1,258,846**	$ 1,124,391	$ 1,491,118
Cost of sales	**803,850**	721,238	944,154
Selling and administrative expenses	**304,978**	279,783	310,516
	1,108,828	1,001,021	1,254,670
Operating income	**150,018**	123,370	236,448
Interest expense	**16,209**	15,944	20,629
Other expense (income), net	**5,992**	5,931	8,975
Income before income taxes	**127,817**	101,495	206,844
Income taxes	**27,944**	38,120	48,494
Net income	**$ 99,873**	$ 63,375	$ 158,350
Per common share:			
Basic	**$ 1.96**	$ 1.25	$ 3.09
Diluted	**$ 1.96**	$ 1.24	$ 3.07
Weighted average common shares outstanding:			
Basic	**50,926,374**	50,880,846	51,213,518
Diluted	**51,079,063**	51,097,586	51,633,169

See accompanying notes.

BARNES GROUP INC.
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(Dollars in thousands)

	Years Ended December 31,		
	2021	**2020**	**2019**
Net income	**$ 99,873**	$ 63,375	$158,350
Other comprehensive (loss) income, net of tax			
Unrealized gain (loss) hedging activities, net of tax (1)	**917**	(642)	(949)
Foreign currency translation adjustments, net of tax (2)	**(60,252)**	86,894	(13,689)
Defined benefit pension and other postretirement benefits, net of tax (3)	**29,812**	1,928	(5,357)
Total other comprehensive (loss) income, net of tax	**(29,523)**	88,180	(19,995)
Total comprehensive income	**$ 70,350**	$151,555	$138,355

(1) Net of tax of $334, $(230) and $(326) for the years ended December 31, 2021, 2020 and 2019, respectively.

(2) Net of tax of $0, $(66) and $(108) for the years ended December 31, 2021, 2020 and 2019, respectively.

(3) Net of tax of $8,916, $401 and $(1,420) for the years ended December 31, 2021, 2020 and 2019, respectively.

See accompanying notes.

BARNES GROUP INC.
CONSOLIDATED BALANCE SHEETS
(Dollars in thousands)

	December 31,	
	2021	2020
Assets		
Current assets		
Cash and cash equivalents	**$ 102,860**	$ 79,145
Accounts receivable, less allowances (2021 – $5,625; 2020 – $6,348)	**262,257**	251,460
Inventories	**239,655**	238,008
Prepaid expenses and other current assets	**75,437**	73,732
Total current assets	**680,209**	642,345
Deferred income taxes	**21,976**	22,092
Property, plant and equipment, net	**341,462**	370,947
Goodwill	**955,370**	1,011,580
Other intangible assets, net	**500,246**	564,132
Other assets	**77,557**	65,130
Total assets	**$ 2,576,820**	$ 2,676,226
Liabilities and Stockholders' Equity		
Current liabilities		
Notes and overdrafts payable	**$ 1,900**	$ 2,115
Accounts payable	**131,076**	112,428
Accrued liabilities	**175,583**	178,560
Long-term debt – current	**1,835**	2,276
Total current liabilities	**310,394**	295,379
Long-term debt	**599,932**	699,868
Accrued retirement benefits	**76,784**	98,171
Deferred income taxes	**66,704**	91,668
Long-term tax liability	**52,114**	59,063
Other liabilities	**42,126**	49,400
Commitments and contingencies (Note 22)		
Stockholders' equity		
Common stock – par value $0.01 per share		
Authorized: 150,000,000 shares		
Issued: at par value (2021 – 64,343,582 shares; 2020 – 64,171,321 shares)	**643**	642
Additional paid-in capital	**516,562**	501,531
Treasury stock, at cost (2021 – 13,658,483 shares; 2020 – 13,530,074 shares)	**(523,642)**	(516,992)
Retained earnings	**1,587,041**	1,519,811
Accumulated other non-owner changes to equity	**(151,838)**	(122,315)
Total stockholders' equity	**1,428,766**	1,382,677
Total liabilities and stockholders' equity	**$ 2,576,820**	$ 2,676,226

See accompanying notes.

BARNES GROUP INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS
(Dollars in thousands)

	Years Ended December 31,		
	2021	**2020**	**2019**
Operating activities:			
Net income	**$ 99,873**	$ 63,375	$ 158,350
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	**91,085**	87,656	99,059
(Gain) loss on disposition of property, plant and equipment	**(1,027)**	(94)	236
Stock compensation expense	**11,470**	10,300	13,306
Seeger divestiture charges	**—**	6,677	—
Non-cash impairment charge related to divestiture	**—**	—	5,600
Changes in assets and liabilities, net of the effects of divestitures:			
Accounts receivable	**(18,793)**	107,381	29,212
Inventories	**(7,350)**	2,147	11,482
Prepaid expenses and other current assets	**(5,208)**	(5,721)	(10,640)
Accounts payable	**22,909**	(9,968)	(22,546)
Accrued liabilities	**(1,630)**	(37,430)	2,336
Deferred income taxes	**(19,354)**	(5,867)	(12,025)
Long-term retirement benefits	**3,423**	(1,418)	(16,233)
Long-term tax liability	**(6,949)**	(6,949)	(6,949)
Other	**(643)**	5,373	(2,887)
Net cash provided by operating activities	**167,806**	215,462	248,301
Investing activities:			
Proceeds from disposition of property, plant and equipment	**3,007**	449	577
Proceeds from the sale of businesses, net of cash sold	**—**	36,062	—
Capital expenditures	**(34,117)**	(40,698)	(53,286)
Business acquisitions, net of cash acquired	**—**	—	(6,061)
Other	**1,304**	—	(3,450)
Net cash used in investing activities	**(29,806)**	(4,187)	(62,220)
Financing activities:			
Net change in other borrowings	**(173)**	(5,855)	5,490
Payments on long-term debt	**(115,507)**	(266,424)	(341,419)
Proceeds from the issuance of long-term debt	**48,300**	98,107	236,552
Proceeds from the issuance of common stock	**1,427**	1,989	5,492
Common stock repurchases	**(5,229)**	(15,550)	(50,347)
Dividends paid	**(32,402)**	(32,402)	(32,544)
Withholding taxes paid on stock issuances	**(1,421)**	(3,368)	(6,059)
Other	**(9,661)**	3,837	(9,158)
Net cash used provided by financing activities	**(114,666)**	(219,666)	(191,993)
Effect of exchange rate changes on cash flows	**(2,893)**	6,054	(1,002)
Increase (decrease) in cash, cash equivalents and restricted cash	**20,441**	(2,337)	(6,914)
Cash, cash equivalents and restricted cash at beginning of year	**91,468**	93,805	100,719
Cash, cash equivalents and restricted cash at end of year	**111,909**	91,468	93,805
Less: Restricted cash, included in Prepaid expenses and other current assets	**(4,524)**	(4,944)	—
Less: Restricted cash, included in Other assets	**(4,525)**	(7,379)	—
Cash and cash equivalents at end of year	**$ 102,860**	**$ 79,145**	**$ 93,805**

See accompanying notes.

BARNES GROUP INC.
CONSOLIDATED STATEMENTS OF CHANGES IN STOCKHOLDERS' EQUITY
(Dollars and shares in thousands)

	Common Stock (Number of Shares)	Common Stock (Amount)	Additional Paid-In Capital	Treasury Stock (Number of Shares)	Treasury Stock	Retained Earnings	Accumulated Other Non-Owner Changes to Equity	Total Stockholders' Equity
January 1, 2019	63,367	$ 634	$ 470,818	12,034	$ (441,668)	$ 1,363,772	$ (190,500)	$ 1,203,056
Comprehensive income	—	—	—	—	—	158,350	(19,995)	138,355
Dividends declared ($0.64 per share)	—	—	—	—	—	(32,544)	—	(32,544)
Common stock repurchases	—	—	—	900	(50,347)	—	—	(50,347)
Employee stock plans	506	5	18,464	117	(6,059)	(402)	—	12,008
December 31, 2019	63,873	639	489,282	13,051	(498,074)	1,489,176	(210,495)	1,270,528
Comprehensive income	—	—	—	—	—	63,375	88,180	151,555
Dividends declared ($0.64 per share)	—	—	—	—	—	(32,402)	—	(32,402)
Common stock repurchases	—	—	—	396	(15,550)	—	—	(15,550)
Employee stock plans	298	3	12,249	83	(3,368)	(338)	—	8,546
December 31, 2020	64,171	642	501,531	13,530	(516,992)	1,519,811	(122,315)	1,382,677
Comprehensive income	—	—	—	—	—	**99,873**	**(29,523)**	**70,350**
Dividends declared ($0.64 per share)	—	—	—	—	—	**(32,402)**	—	**(32,402)**
Residual interest in subsidiary	—	—	**2,177**	—	—	—	—	**2,177**
Common stock repurchases	—	—	—	**100**	**(5,229)**	—	—	**(5,229)**
Employee stock plans	**173**	**1**	**12,854**	**28**	**(1,421)**	**(241)**	—	**11,193**
December 31, 2021	**64,344**	**$ 643**	**$ 516,562**	**13,658**	**$ (523,642)**	**$ 1,587,041**	**$ (151,838)**	**$ 1,428,766**

See accompanying notes.

BARNES GROUP INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
(All dollar amounts included in the notes are stated in thousands except per share data and the tables in Note 21)

1. Summary of Significant Accounting Policies

General: The preparation of consolidated financial statements requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

The COVID-19 pandemic ("COVID-19") has resulted in a disruption in business activities worldwide and has caused weakened economic conditions, both in the United States and abroad. COVID-19 has had, and may continue to have, a significant negative impact on the Company's ongoing operations and the end markets in which it serves. The Company has assessed the impacts on its accounting estimates, assumptions and disclosures.

Consolidation: The accompanying consolidated financial statements include the accounts of the Company and all of its subsidiaries. Intercompany transactions and account balances have been eliminated.

Revenue recognition: The Company accounts for revenue in accordance with Accounting Standard Codification 606, Revenue from Contracts with Customers, which it adopted on January 1, 2018. Revenue is recognized by the Company when control of the product or solution is transferred to the customer. Control is generally transferred when products are shipped or delivered to customers, title is transferred, the significant risks and rewards of ownership have transferred, the Company has rights to payment and rewards of ownership pass to the customer. Customer acceptance may also be a factor in determining whether control of the product has transferred. Although revenue is generally transferred at a point in time, a certain portion of businesses with customized products or contracts in which the Company performs work on customer-owned assets requires the use of an over time recognition model as certain contracts meet one or more of the established criteria pursuant to the accounting standards governing revenue recognition. Also, service revenue is recognized as control transfers, which is concurrent with the services being performed. See Note 3. Management fees related to the Aerospace Aftermarket Revenue Sharing Programs ("RSPs") are satisfied through an agreed upon reduction from the sales price of each of the related spare parts. These fees recognize our customer's necessary performance of engine program support activities, such as spare parts administration, warehousing and inventory management, and customer support, and are not separable from our sale of products, and accordingly, they are reflected as a reduction to sales, rather than as costs incurred, when revenues are recognized.

Cash and cash equivalents: Cash in excess of operating requirements is generally invested in short-term, highly liquid, income-producing investments. All highly liquid investments purchased with an original maturity of three months or less are considered cash equivalents. Cash equivalents are carried at cost which approximates fair value.

Accounts receivable: The Company records accounts receivable at net realizable value. Balances are reviewed regularly and reserves are adjusted when events or circumstances indicate carrying values may not be recoverable. Effective January 1, 2020, the Company adopted the amended guidance related to credit losses on financial instruments. See "Recently Adopted Accounting Standards" below for additional discussion regarding the application of this amended guidance.

Inventories: Inventories are valued at the lower of cost, determined on a first-in, first-out basis, or net realizable value. The primary components of cost included in inventories are raw material, labor and overhead. Provisions are made to reduce excess or obsolete inventories to their estimated net realizable value. The process for evaluating the value of excess and obsolete inventory often requires the Company to make judgments and estimates concerning future sales levels, quantities and prices at which such inventory will be sold in the normal course of business and estimated costs. Accelerating the disposal process or changes in estimates based on future sales potential or estimated costs may necessitate future adjustments to these provisions.

Property, plant and equipment: Property, plant and equipment is stated at cost. Depreciation is recorded using a straight-line method of depreciation over estimated useful lives, generally ranging from 20 to 50 years for buildings and four to 12 years for machinery and equipment. The Company assesses the impairment of property, plant and equipment subject to depreciation whenever events or changes in circumstances indicate the carrying value may not be recoverable.

Goodwill: Goodwill represents the excess purchase cost over the fair value of net assets of companies acquired in business combinations. Goodwill is considered an indefinite-lived asset. Goodwill is subject to impairment testing in accordance with accounting standards governing such on an annual basis, in the second quarter, or more frequently if an event or change in circumstances indicates that the fair value of a reporting unit has been reduced below its carrying value. Based on the assessment performed there was no goodwill impairment in 2021.

The Company executed a Share Purchase and Transfer Agreement to sell its Seeger business in December 2019. The Company recorded a non-cash impairment charge of $5,600 related to the goodwill allocated to Seeger. The impairment charge was recorded within Selling and Administrative expenses on the Consolidated Statement of Income in the period ended December 31, 2019. The Company assessed the goodwill within the remaining Engineered Components reporting unit and determined that there was no further impairment. See Note 2.

Leases: Contracts are evaluated at inception to determine whether they contain a lease. Operating lease right-of use assets and liabilities are recognized based on the present value of the future minimum lease payments over the lease term at the lease commencement date for operating leases with an initial term greater than 12 months. The Company recognizes lease expense for minimum lease payments on a straight line basis over the term of the lease. Certain leases provide the option to purchase the leased property and are therefore evaluated for finance lease consideration. The depreciable life of leased assets are limited by the expected term of the lease, unless there is a transfer of title or purchase option and the Company believes it is reasonably certain of exercise. The Company utilizes its incremental borrowing rate by lease term to calculate the present value of our future lease payments if an implicit rate is not specified. See Note 19.

Aerospace Aftermarket Programs: The Company participates in aftermarket RSPs under which the Company receives an exclusive right to manufacture and supply designated aftermarket parts over the life of the related aircraft engine program. As consideration, the Company has paid participation fees, which are recorded as long-lived intangible assets. The Company records amortization of the related intangible asset as sales dollars are being earned based on a proportional sales dollar method. Specifically, this method amortizes each asset as a reduction to revenue based on the proportion of sales under a program in a given period to the estimated aggregate sales dollars over the life of that program. This method reflects the pattern in which the economic benefits of the RSPs are realized.

The Company also entered into Component Repair Programs ("CRPs") that provide for, among other items, the right to sell certain aftermarket component repair services for CFM56, CF6, CF34 and LM engines directly to other customers as one of a few GE licensed suppliers. In addition, the CRPs extended certain existing contracts under which the Company currently provides these services directly to GE. The Company recorded the consideration for these rights as an intangible asset that is amortized as a reduction to sales over the remaining life of these engine programs based on the estimated sales over the life of such programs. This method reflects the pattern in which the economic benefits of the CRPs are realized.

The recoverability of each asset is subject to significant estimates about future revenues related to the program's aftermarket parts and services. The Company evaluates these intangible assets for recoverability and updates amortization rates on an agreement by agreement basis for the RSPs and on an individual asset program basis for the CRPs. The assets are reviewed for recoverability periodically including whenever events or changes in circumstances indicate that their carrying amount may not be recoverable. Annually, the Company evaluates the remaining useful life of these assets to determine whether events and circumstances warrant a revision to the remaining periods of amortization. Management updates revenue projections, which includes comparing actual experience against projected revenue and industry projections. The potential exists that actual revenues will not meet expectations due to a change in market conditions including, for example, the replacement of older engines with new, more fuel-efficient engines or the Company's ability to maintain market share within the Aftermarket business. A shortfall in future revenues may indicate a triggering event requiring a write down or further evaluation of the recoverability of the assets or require the Company to accelerate amortization expense prospectively dependent on the level of the shortfall. Management considered the impacts of the COVID-19 pandemic on the broader aerospace end markets during its evaluation of these intangible assets in 2021. The Company has not identified any impairment of these assets, although changes in projected RSP and CRP revenue has impacted amortization rates that will be applied in remaining periods.

Other Intangible Assets: Other intangible assets consist primarily of the Aerospace Aftermarket programs, as discussed above, customer relationships, tradenames, patents and proprietary technology. These intangible assets, with the exception of certain tradenames, have finite lives and are amortized over the periods in which they provide benefit. The Company assesses the impairment of long-lived assets, including identifiable intangible assets subject to amortization, whenever significant events or significant changes in circumstances indicate the carrying value may not be recoverable. Tradenames with indefinite lives are

subject to impairment testing in accordance with accounting standards governing such on an annual basis, in the second quarter, or more frequently if an event or change in circumstances indicates that the fair value of the asset has been reduced below its carrying value. Based on the assessments performed during 2021, there were no impairments of other intangible assets. See Note 6.

Derivatives: Accounting standards related to the accounting for derivative instruments and hedging activities require that all derivative instruments be recorded on the balance sheet at fair value. Foreign currency contracts may qualify as fair value hedges of unrecognized firm commitments, cash flow hedges of recognized assets and liabilities or anticipated transactions, or a hedge of a net investment. Changes in the fair market value of derivatives that qualify as fair value hedges or cash flow hedges are recorded directly to earnings or accumulated other non-owner changes to equity, depending on the designation. Amounts recorded to accumulated other non-owner changes to equity are reclassified to earnings in a manner that matches the earnings impact of the hedged transaction. Any ineffective portion, or amounts related to contracts that are not designated as hedges, are recorded directly to earnings. The Company's policy for classifying cash flows from derivatives is to report the cash flows consistent with the underlying hedged item. See Note 10.

Foreign currency: Assets and liabilities are translated at year-end rates of exchange; revenues and expenses are translated at average rates of exchange. The resulting translation gains or losses are reflected in accumulated other non-owner changes to equity within stockholders' equity. Net foreign currency transaction losses of $572, $1,518 and $6,485 in 2021, 2020 and 2019, respectively, were recorded within other expense (income), net in the Consolidated Statements of Income.

Research and Development: Costs are incurred in connection with efforts aimed at discovering and implementing new knowledge that is critical to developing new products, processes or services, significantly improving existing products or services, and developing new applications for existing products and services. Research and development expenses for the creation of new and improved products, processes and services were $22,928, $16,949 and $15,666, for the years 2021, 2020 and 2019, respectively, and are included in selling and administrative expense.

Pension and Other Postretirement Benefits: The Company accounts for its defined benefit pension plans and other postretirement plans by recognizing the overfunded or underfunded status of the plans, calculated as the difference between plan assets and the projected benefit obligation related to each plan, as an asset or liability on the Consolidated Balance Sheets. Benefit costs associated with the plans primarily include current service costs, interest costs and the amortization of actuarial losses, partially offset by expected returns on plan assets, which are determined based upon actuarial valuations. Settlement and curtailment losses (gains) may also impact benefit costs. The Company regularly reviews actuarial assumptions, including discount rates and the expected return on plan assets, which are updated at the measurement date, December 31st. The impact of differences between actual results and the assumptions are generally accumulated within Other Comprehensive Income and amortized over future periods, which will affect benefit costs recognized in such periods. The Company bifurcates the components of net periodic benefit cost for pension and other postretirement plans. The service cost component of expense requires presentation with other employee compensation costs in operating income, whereas the other components of expense are reported separately outside of operating income. See Note 12.

Stock-Based Compensation: Stock-based employee compensation plans are accounted for based on their fair value on the grant date and the related cost is recognized in the Consolidated Statements of Income in accordance with accounting standards related to share-based payments. The fair values of stock options are estimated using the Black-Scholes option-pricing model based on certain assumptions. The fair values of service and performance based share awards are estimated based on the fair market value of the Company's stock price on the grant date. The fair values of market based performance share awards are estimated using the Monte Carlo valuation method. See Note 13.

Income Taxes: Deferred tax assets and liabilities are recognized for future tax effects attributable to temporary differences, operating loss carryforwards and tax credits. The measurement of deferred tax assets and liabilities is determined using tax rates from enacted tax law of the period in which the temporary differences, operating loss carryforwards and tax credits are expected to be realized. The effect of the change in income tax rates is recognized in the period of the enactment date. The guidance related to accounting for income taxes requires that deferred tax assets be reduced by a valuation allowance if, based on all available evidence, it is more likely than not that the deferred tax asset will not be realized. The Company is exposed to certain tax contingencies in the ordinary course of business and records those tax liabilities in accordance with the guidance for accounting for uncertain tax positions. The Company has elected to account for tax on Global Intangible Low-Taxed Income ("GILTI") as a period cost, when incurred. See Note 14.

Recent Accounting Standards

The Financial Accounting Standards Board ("FASB") establishes changes to accounting principles under U.S. GAAP through the use of Accounting Standards Updates ("ASUs") to the FASB's Accounting Standards Codification. The Company evaluates the applicability and potential impacts of recent ASUs on its Consolidated Financial Statements and related disclosures.

Recently Adopted Accounting Standards

In June 2016, the FASB amended its guidance related to credit losses on financial instruments. The amended guidance required the use of a methodology of estimation that reflects expected credit losses on certain types of financial instruments, including trade receivables, as a replacement to the current methodology, which estimates losses based on incurred credit losses. This expected credit loss methodology required that the Company consider a broader range of information when estimating credit losses on receivables. The amended guidance was effective for fiscal years, and interim periods within those years, beginning after December 15, 2019. The Company adopted this amended guidance and applicable FASB updates related to the guidance during the first quarter of 2020 and it did not have a material impact on the Company's Consolidated Financial Statements.

In August 2018, the FASB amended its guidance related to disclosure requirements for employers that sponsor defined benefit pension or other postretirement plans. The amended requirements serve to remove, add and otherwise clarify certain existing disclosures. The amended guidance was effective for fiscal years ending after December 15, 2020. The guidance requires application on a retrospective basis to all periods presented. The Company has adopted this guidance within the Consolidated Financial Statements filed as of December 31, 2020 and it did not have a material impact. See Note 12.

In December 2019, the FASB amended its guidance related to income taxes. The amended guidance simplifies the accounting for income taxes, eliminating certain exceptions to the general income tax principles, in an effort to reduce the cost and complexity of application. The amended guidance is effective for annual periods beginning after December 15, 2020, and interim periods within those reporting periods. Early adoption is permitted in any interim or annual period. The guidance requires application on either a prospective, retrospective or modified retrospective basis, contingent on the income tax exception being applied. The Company has adopted this guidance, on a prospective basis, on January 1, 2021 and it did not have a material impact on the Company's Consolidated Financial Statements.

Recently Issued Accounting Standards

The United Kingdom's Financial Conduct Authority, which regulates the London Interbank Offered Rate (“LIBOR”), announced its intent to phase out the use of LIBOR by December 31, 2021. The U.S. Federal Reserve, in conjunction with the Alternative Reference Rates Committee, a steering committee comprised of large U.S. financial institutions, identified the Secured Overnight Financing Rate (“SOFR”) as its preferred benchmark alternative to U.S. dollar LIBOR. Published by the Federal Reserve Bank of New York, SOFR represents a measure of the cost of borrowing cash overnight, collateralized by U.S. Treasury securities, and is calculated based on directly observable U.S. Treasury-backed repurchase transactions. In March 2020, in response to this transition, the FASB issued guidance related to this rate reform, which provides optional expedients and exceptions for applying U.S. GAAP to contracts, hedging relationships and other transactions that reference LIBOR or another reference rate expected to be discontinued by reference rate reform, and addresses operational issues likely to arise in modifying contracts to replace discontinued reference rates with new rates. In January 2021, the FASB issued further clarifying guidance regarding derivatives, as it relates to this transition. The guidance is effective through December 31, 2022. The Company’s Amended Credit Agreement (Note 8) and corresponding interest rate Swaps (Note 10) are tied to LIBOR, with each maturing in February 2026. In March 2021, the ICE Benchmark Association announced that it will extend the publication of overnight, 1, 3, 6 and 12 month LIBOR rates until June 30, 2023, while ceasing publication of all other LIBOR rates including 1 week and 2 month rates. See Note 8 as the Company's Credit Agreement was amended in October 2021 to address the replacement of LIBOR, defining certain applicable multi-currency borrowing rates that may be used as a replacement. The Company is continuing to monitor the potential impact of the replacement of LIBOR, but does not anticipate a material impact on our business, financial condition, results of operations or cash flows.

In October 2021, the FASB amended its guidance related to business combinations. The amended guidance requires entities to recognize and measure contract assets and contract liabilities acquired in business combinations on the acquisition date in accordance with Account Standard Codification 606, *Revenue from Contracts with Customers*. The new guidance is

effective on a prospective basis for fiscal years beginning after December 15, 2022, with early adoption permitted. The Company is currently evaluating the amended guidance and will apply the guidance to future acquisitions.

2. Divestiture

On December 20, 2019, the Company entered into a Share Purchase and Transfer Agreement ("SPA") with the Kajo Neukirchen Group ("KNG") to sell the Seeger business, consisting of partnership interests and shares, respectively, of Seeger-Orbis GmbH & Co. OHG and Seeger-Orbis Mechanical Components (Tianjin) Co., Ltd. (“Seeger”) for 42,500 Euros, subject to certain adjustments. Pursuant to the required accounting guidance, the Company allocated $15,000 of goodwill from the Engineered Components reporting unit to Seeger based on the estimated relative fair values of the business to be disposed of and the portion of the reporting unit that will be retained. The Company subsequently recorded an impairment charge of $5,600 related to the goodwill that was allocated to Seeger. The impairment charge was recorded within Selling and Administrative expenses on the Consolidated Statements of Income in the period ended December 31, 2019.

The Company completed the sale of the Seeger business to KNG effective February 1, 2020. Gross proceeds received were 38,964 Euros ($42,915) after consideration of post-closing adjustments, which were made during the fourth quarter of 2020, pursuant to the terms of the SPA. The Company yielded net cash proceeds of $36,062 after consideration of cash sold and transaction costs. Resulting tax charges of $4,211 were recognized in the first quarter of 2020 following the completion of the sale. Divestiture charges of $2,466 resulted from the completion of the sale and were recorded within Selling and Administrative expenses on the Consolidated Statement of Income for the year ended December 31, 2020.

The Company utilized the proceeds from the sale to reduce debt under the Amended Credit Agreement. Pursuant to the SPA, 6,000 Euros of the proceeds were placed in escrow and will be released through 2024, pending any potential settlement of claims. Cash related to a pending claim would remain in escrow until a final determination of the claim has been made. The Company has recorded the restricted cash in Prepaid Expenses and Other Current Assets and Other Assets (non-current) as of December 31, 2021.

3. Revenue

The Company is a global provider of highly engineered products, differentiated industrial technologies, and innovative solutions, serving a wide range of end markets and customers. Its specialized products and services are used in far-reaching applications in healthcare, automation, packaging, aerospace, mobility, and manufacturing. Revenue is recognized by the Company when control of the product or solution is transferred to the customer. Control is generally transferred when products are shipped or delivered to customers, title is transferred, the significant risks of ownership have transferred, the Company has rights to payment and the rewards of ownership pass to the customer. Customer acceptance may also be a factor in determining whether control of the product has transferred. Although revenue is generally transferred at a point in time, a certain portion of businesses with customized products or contracts in which the Company performs work on customer-owned assets requires the use of an over-time recognition model as certain contracts meet one or more of the established criteria pursuant to the accounting guidance. Also, service revenue is recognized as control transfers, which is concurrent with the services being performed.

The following tables present the Company's revenue disaggregated by products and services, geographic regions and end markets, by segment:

	2021		
	Industrial	**Aerospace**	**Total Company**
Product and Services			
Engineered Components Products	$ 184,241	$ —	$ 184,241
Molding Solutions Products	458,681	—	458,681
Force & Motion Control Products	185,597	—	185,597
Automation Products	67,964	—	67,964
Aerospace Original Equipment Manufacturing Products	—	246,850	246,850
Aerospace Aftermarket Product and Services	—	115,513	115,513
	$ 896,483	$ 362,363	$ 1,258,846
Geographic Regions [(A)]			
Americas	$ 356,518	$ 271,241	$ 627,759
Europe	335,679	58,237	393,916
Asia	199,578	29,701	229,279
Rest of World	4,708	3,184	7,892
	$ 896,483	$ 362,363	$ 1,258,846
End Markets			
Aerospace OEM	$ 9,278	$ 246,850	$ 256,128
Aerospace Aftermarket	—	115,513	115,513
Medical, Personal Care & Packaging	219,672	—	219,672
Tool and Die	95,466	—	95,466
General Industrial	255,942	—	255,942
Auto Molding Solutions	150,125	—	150,125
Auto Production	98,036	—	98,036
Automation	67,964	—	67,964
	$ 896,483	$ 362,363	$ 1,258,846

(A) Sales by geographic market are based on the location to which the product is shipped and services are delivered.

	2020		
	Industrial	Aerospace	Total Company
Product and Services			
Engineered Components Products	$ 161,024	$ —	$ 161,024
Molding Solutions Products	400,806	—	400,806
Force & Motion Control Products	153,397	—	153,397
Automation Products	54,892	—	54,892
Aerospace Original Equipment Manufacturing Products	—	234,578	234,578
Aerospace Aftermarket Product and Services	—	119,694	119,694
	$ 770,119	$ 354,272	$ 1,124,391
Geographic Regions (A)			
Americas	$ 293,339	$ 257,370	$ 550,709
Europe	308,288	62,250	370,538
Asia	164,002	30,316	194,318
Rest of World	4,490	4,336	8,826
	$ 770,119	$ 354,272	$ 1,124,391
End Markets			
Aerospace OEM	$ 11,182	$ 234,577	$ 245,759
Aerospace Aftermarket	—	119,695	119,695
Medical, Personal Care & Packaging	213,725	—	213,725
Tool and Die	81,187	—	81,187
General Industrial	192,547	—	192,547
Auto Molding Solutions	125,337	—	125,337
Auto Production	91,249	—	91,249
Automation	54,892	—	54,892
	$ 770,119	$ 354,272	$ 1,124,391

(A) Sales by geographic market are based on the location to which the product is shipped and services are delivered.

	2019		
	Industrial	Aerospace	Total Company
Product and Services			
Engineered Components Products	$ 254,569	$ —	$ 254,569
Molding Solutions Products	442,564	—	442,564
Force & Motion Control Products	186,737	—	186,737
Automation Products	54,637	—	54,637
Aerospace Original Equipment Manufacturing Products	—	367,538	367,538
Aerospace Aftermarket Product and Services	—	185,073	185,073
	$ 938,507	$ 552,611	$ 1,491,118
Geographic Regions (A)			
Americas	$ 365,903	$ 397,580	$ 763,483
Europe	349,001	99,204	448,205
Asia	219,872	51,754	271,626
Rest of World	3,731	4,073	7,804
	$ 938,507	$ 552,611	$ 1,491,118
End Markets			
Aerospace OEM	$ 14,128	$ 367,538	$ 381,666
Aerospace Aftermarket	—	185,073	185,073
Medical, Personal Care & Packaging	222,963	—	222,963
Tool and Die	102,476	—	102,476
General Industrial	240,983	—	240,983
Auto Molding Solutions	144,122	—	144,122
Auto Production	159,197	—	159,197
Automation	54,638	—	54,638
	$ 938,507	$ 552,611	$ 1,491,118

(A) Sales by geographic market are based on the location to which the product is shipped and services are delivered.

Revenue from products and services transferred to customers at a point in time accounted for approximately 80 percent for the year ended December 31, 2021, approximately 85 percent of revenue for the year ended December 31, 2020 and approximately 90 percent of revenue for the year ended December 31, 2019. A majority of revenue within the Industrial segment and Aerospace OEM business, along with a portion of revenue within the Aerospace Aftermarket business, is recognized at a point in time, primarily when the product or solution is shipped to the customer.

Revenue from products and services transferred to customers over-time accounted for approximately 20 percent of revenue for the year ended December 31, 2021, approximately 15 percent of revenue for the year ended December 31, 2020 and approximately 10 percent of revenue for the year ended December 31, 2019. The Company recognizes revenue over-time in instances where a contract supports a continual transfer of control to the customer. Substantially all of our revenue in the Aerospace Aftermarket maintenance repair and overhaul business (within Aftermarket Products and Services) and a portion of the revenue for Engineered Components products, Molding Solutions products and Aerospace OEM products is recognized over-time. Within the Molding Solutions and Aerospace Aftermarket businesses, this continual transfer of control to the customer partially results from repair and refurbishment work performed on customer-controlled assets. With other contracts, this continual transfer of control to the customer is supported by clauses in the contract, or governing commercial law of the relevant jurisdiction, where we deliver products that do not have an alternative use and require an enforceable right to payment of costs incurred (plus a reasonable profit) or the Company has a contractual right to complete any work in process and receive full contract price.

Performance Obligations. A performance obligation represents a promise within a contract to provide a distinct good or service to the customer. The Company accounts 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 collectibility of consideration is probable. Transaction price reflects the amount of consideration to which the Company expects to be entitled in exchange for transferred goods or services. A contract's transaction price is allocated to each distinct performance obligation and revenue is recognized as the performance obligation is satisfied.

The majority of our revenues are from contracts that are less than one year, however certain Aerospace OEM and Industrial Molding Solutions business contracts extend beyond one year. In the Industrial segment, customers are typically OEMs or suppliers to OEMs and, in some businesses, distributors. In the Aerospace segment, customers include commercial airlines, OEMs and other aircraft and defense-related parts and service providers.

To determine the proper revenue recognition method for contracts, the Company uses judgment to evaluate whether two or more contracts should be combined and accounted for as one single contract and whether the combined or single contract should be accounted for as more than one performance obligation. Contracts within the Aerospace OEM and Industrial Engineered Components businesses typically have contracts that are combined as the customer may issue multiple purchase orders at or near the same point in time under the terms of a long term agreement.

Revenue is recognized in an over-time model based on the extent of progress towards completion of the performance obligation. The selection of the method to measure progress towards completion requires judgment and is based on the nature of the products or services to be provided. The Company utilizes the cost-to-cost measure of progress for over time contracts as we believe this measure best depicts the transfer of control to the customer, which occurs as we incur costs on contracts.

Contract Estimates. Due to the nature of the work performed in completing certain performance obligations, the estimation of both total revenue and cost at completion includes a number of variables and requires significant judgment, as described further below.

Estimating total contract revenue may require judgment as certain contracts contain pricing discount structures, rebates, early payment discounts, or other provisions that can impact transaction price. The Company generally estimates variable consideration utilizing the expected value methodology as multiple inputs are considered and weighed, such as customer history, customer forecast communications, economic outlooks, and industry data. In certain circumstances where a particular outcome is probable, we utilize the most likely amount to which we expect to be entitled. The Company includes estimated amounts in the transaction price to the extent it is probable that a significant reversal of cumulative revenue recognized will not occur when the uncertainty associated with the variable consideration is resolved.

Estimating the total expected costs related to contracts also requires significant judgment. The Aerospace OEM business as well as a portion of our Molding Solutions Products business has an Estimate at Completion process in which management reviews the progress and execution of our performance obligations for significant contracts with revenue recognized under an over-time model. As part of this process, management reviews information including, but not limited to, performance under the contract, progress towards completion, identified risks and opportunities, sourcing determinations and related changes in estimates of costs to be incurred. These considerations include management's judgment about the ability and cost to achieve technical requirements and other contract requirements. Management makes assumptions and estimates regarding labor efficiency, the complexity of the work to be performed, the availability of materials, the length of time to complete the performance obligation (e.g., to estimate increases in wages and prices for materials and related support cost allocations), execution by our subcontractors and overhead cost rates, among other variables.

The Company generally utilizes the portfolio approach to estimate the amount of revenue to recognize for certain other contracts which require over-time revenue recognition. Such contracts are grouped together either by revenue stream, customer or product. Each portfolio of contracts is grouped together based on having similar characteristics. The portfolio approach is utilized only when the result of the accounting is not expected to be materially different than if applied to individual contracts.

Adjustments to net sales, cost of sales and the related impact to operating income are recognized as necessary in the period they become known. Revenue recognized from performance obligations satisfied in previous periods was not material in 2021, 2020 or 2019.

Contract Balances. The timing of revenue recognition, invoicing and cash collections affect accounts receivable, unbilled receivables (contract assets) and customer advances and deposits (contract liabilities) on the Consolidated Balance Sheets.

Unbilled Receivables (Contract Assets) - Pursuant to the over-time revenue recognition model, revenue may be recognized prior to the customer being invoiced. An unbilled receivable is recorded to reflect revenue that is recognized when 1) the cost-to-cost method is applied and 2) such revenue exceeds the amount invoiced to the customer. Unbilled receivables are included within prepaid expenses and other current assets on the Consolidated Balance Sheets as of December 31, 2021 and 2020.

Customer Advances and Deposits (Contract Liabilities) - The Company may receive a customer advance or deposit, or have an unconditional right to receive a customer advance, prior to revenue being recognized. Certain contracts within the Molding Solutions business, for example, may require such advances. Since the performance obligations related to such advances may not have been satisfied, a contract liability is established. An offsetting asset of equal amount is recorded as an account receivable until the advance is collected. Advances and deposits are included within Accrued Liabilities on the Consolidated Balance Sheets until the respective revenue is recognized. Advance payments are not considered a significant financing component as they are generally received less than one year before the customer solution is completed. These assets and liabilities are reported on the Consolidated Balance Sheets on an individual contract basis at the end of each reporting period.

Net contract assets (liabilities) consisted of the following:

	December 31, 2021	December 31, 2020	$ Change	% Change
Unbilled receivables (contract assets)	$ 33,522	$ 33,009	$ 513	2 %
Contract liabilities	(25,374)	(39,865)	14,491	(36)%
Net contract assets (liabilities)	$ 8,148	$ (6,856)	$ 15,004	NM

NM - Not Meaningful

Contract liabilities balances at December 31, 2021 and December 31, 2020 include $9,364 and $12,750, respectively, of customer advances for which the Company has an unconditional right to collect payment. Accounts receivable, as presented on the Consolidated Balance Sheet, includes corresponding balances at December 31, 2021 and December 31, 2020, respectively.

Changes in the net contract assets (liabilities) balance during the year ended December 31, 2021 were impacted by a $14,491 decrease in contract liabilities, driven primarily by revenue recognized in the current period, partially offset by new customer advances and deposits. Adding to this net contract asset (liability) increase was a $513 increase in contract assets, driven primarily by contract progress (i.e. unbilled receivable), offset by earlier contract progress being invoiced to the customer.

The Company recognized approximately 100% of the revenue related to the contract liability balance as of December 31, 2020 during the year ended December 31, 2021 and 100% of the revenue related to the contract liability balance as of December 31, 2019 during the year ended December 31, 2020, primarily representing revenue from the sale of molds and hot runner systems within the Molding Solutions business.

Contract Costs. The Company may incur costs to fulfill a contract. Costs are incurred to develop, design and manufacture tooling to produce a customer's customized product in conjunction with certain of its contracts, primarily in the Aerospace OEM business. For certain contracts, control related to this tooling remains with the Company. The tooling may be deemed recoverable over the life of the related customer contract (oftentimes a long-term agreement). The Company therefore capitalizes these tooling costs and amortizes them over the shorter of the tooling life or the duration of the long-term agreement. The Company may also incur costs related to the development of product designs (molds or hot runner systems) within its Molding Solutions business. Control of the design may be retained by the Company and deemed recoverable over the contract to build the systems or mold, therefore this design work cost is capitalized and amortized to cost of sales when the related revenue is recognized. Amortization related to these capitalized costs to fulfill a contract were $13,446, $12,847, and $14,078 in the years ended December 31, 2021, 2020 and 2019, respectively.

Capitalized costs, net of amortization, to fulfill a contract balances were as follows:

	December 31, 2021	December 31, 2020
Tooling	$ 3,800	$ 4,976
Design costs	3,252	2,871
	$ 7,052	$ 7,847

Remaining Performance Obligations. The Company has elected to disclose remaining performance obligations only for contracts with an original duration of greater than one year. Such remaining performance obligations represent the transaction price of firm orders for which work has not been performed and, for Aerospace, excludes projections of components and assemblies that Aerospace OEM customers anticipate purchasing in the future under existing programs, which represent orders that are beyond lead time and do not represent performance obligations pursuant to the accounting guidance. As of December 31, 2021, the aggregate amount of the transaction price allocated to remaining performance obligations was $177,304. The Company expects to recognize revenue on approximately 70% of the remaining performance obligations over the next 12 months, with the remainder being recognized within 24 months. As of December 31, 2020, the aggregate amount of the transaction price allocated to remaining performance obligations was $168,426.

4. Inventories

Inventories at December 31 consisted of:

	2021	2020
Finished goods	**$ 88,954**	$ 79,833
Work-in-process	**65,468**	76,542
Raw materials and supplies	**85,233**	81,633
	$ 239,655	$ 238,008

5. Property, Plant and Equipment

Property, plant and equipment, net, at December 31 consisted of:

	2021	2020
Land	**$ 18,476**	$ 19,182
Buildings	**187,012**	194,936
Machinery and equipment	**699,407**	696,260
	904,895	910,378
Less accumulated depreciation	**(563,433)**	(539,431)
	$ 341,462	$ 370,947

Depreciation expense was $47,600, $46,590 and $47,552 during 2021, 2020 and 2019, respectively.

6. Goodwill and Other Intangible Assets

Goodwill: The following table sets forth the change in the carrying amount of goodwill for each reportable segment and the Company:

	Industrial	Aerospace	Total Company
January 1, 2020	$ 902,236	$ 30,786	$ 933,022
Foreign currency translation	78,558	—	78,558
December 31, 2020	980,794	30,786	1,011,580
Foreign currency translation	**(56,210)**	**—**	**(56,210)**
December 31, 2021	**$ 924,584**	**$ 30,786**	**$ 955,370**

Of the $955,370 of goodwill at December 31, 2021, $43,860 represents the original tax deductible basis.

Other Intangible Assets: Other intangible assets at December 31 consisted of:

		2021		2020	
	Range of Life-Years	Gross Amount	Accumulated Amortization	Gross Amount	Accumulated Amortization
Amortized intangible assets:					
Revenue Sharing Programs	Up to 30	**$ 299,500**	**$ (151,961)**	$ 299,500	$ (143,209)
Component Repair Programs	Up to 30	**111,839**	**(35,632)**	111,839	(30,869)
Customer relationships	10-16	**337,189**	**(137,856)**	338,366	(118,752)
Patents and technology	4-11	**123,433**	**(86,002)**	123,433	(77,311)
Trademarks/trade names	10-30	**10,949**	**(10,587)**	10,949	(10,377)
Other	Up to 10	**7,450**	**(2,072)**	10,746	(4,580)
		890,360	**(424,110)**	894,833	(385,098)
Unamortized intangible asset:					
Trade names		**55,670**	—	55,670	—
Foreign currency translation		**(21,674)**	**—**	(1,273)	—
Other intangible assets		**$ 924,356**	**$ (424,110)**	$ 949,230	$ (385,098)

The Company has entered into a number of Aftermarket RSP and CRP agreements each of which is with our customer, General Electric ("GE"). See Note 1 for a further discussion of these programs. As of December 31, 2021, the Company has made all required payments under the RSP and CRP agreements.

Amortization of intangible assets for the years ended December 31, 2021, 2020 and 2019 was $43,485, $41,066 and $51,502, respectively. Estimated amortization of intangible assets for future periods is as follows: 2022 - $43,000; 2023 - $45,000; 2024 - $44,000; 2025 - $43,000 and 2026 - $43,000.

7. Accrued Liabilities

Accrued liabilities at December 31 consisted of:

	2021	2020
Payroll and other compensation	**$ 49,872**	$ 26,834
Contract liabilities (Note 3)	**25,374**	39,865
Pension and other postretirement benefits	**6,043**	6,318
Accrued income taxes	**37,908**	31,883
Lease liability	**11,125**	11,707
Business reorganizations (Note 9)	**1,222**	13,151
Other	**44,039**	48,802
	$ 175,583	$ 178,560

8. Debt and Commitments

Long-term debt and notes and overdrafts payable at December 31 consisted of:

	2021		2020	
	Carrying Amount	Fair Value	Carrying Amount	Fair Value
Amended Credit Agreement	**$ 495,262**	**$ 516,380**	$ 593,622	$ 601,936
3.97% Senior Notes	**100,000**	**105,541**	100,000	109,151
Borrowings under lines of credit and overdrafts	**224**	**224**	2,115	2,115
Finance leases	**6,505**	**6,827**	8,268	8,650
Other	**1,676**	**1,676**	254	257
	603,667	**630,648**	704,259	722,109
Less current maturities	**(3,735)**		(4,391)	
Long-term debt	**$ 599,932**		$ 699,868	

The Company's long-term debt portfolio consists of fixed-rate and variable-rate instruments and is managed to reduce the overall cost of borrowing and to mitigate fluctuations in interest rates. Among other things, interest rate fluctuations impact the market value of the Company's fixed-rate debt.

In October 2014, the Company entered into a Note Purchase Agreement ("Note Purchase Agreement"), among the Company and New York Life Insurance Company, New York Life Insurance and Annuity Corporation and New York Life Insurance and Annuity Corporation Institutionally Owned Life Insurance Separate Account, as purchasers, for the issuance of $100,000 aggregate principal amount of 3.97% Senior Notes due October 17, 2024 (the "3.97% Senior Notes"). The 3.97% Senior Notes are senior unsecured obligations of the Company and pay interest semi-annually on April 17 and October 17 of each year at an annual rate of 3.97%. The 3.97% Senior Notes will mature on October 17, 2024 unless earlier prepaid in accordance with their terms. Subject to certain conditions, the Company may, at its option, prepay all or any part of the 3.97% Senior Notes in an amount equal to 100% of the principal amount of the 3.97% Senior Notes so prepaid, plus any accrued and unpaid interest to the date of prepayment, plus the Make-Whole Amount, as defined in the Note Purchase Agreement, with respect to such principal amount being prepaid. The fair value of the 3.97% Senior Notes was determined using the U.S. Treasury yield and a long-term credit spread for similar types of borrowings, which represent Level 2 observable inputs.

On October 8, 2020, the Company entered into the sixth amendment to its fifth amended and restated revolving credit agreement with Bank of America (the "Sixth Amendment") and the first amendment to the Note Purchase Agreement with New York Life (the "First NPA Amendment" and, collectively with the Sixth Amendment, the "Amendments"). The Sixth Amendment maintained the borrowing availability of $1,000,000 along with access to request an additional $200,000 through an accordion feature. The Sixth Amendment and the First NPA Amendment provided for an increase in the Company's maximum ratio of Consolidated Senior Debt, as defined, to Consolidated EBITDA, as defined, from 3.25 times (or, if a certain permitted acquisition above $150,000 is consummated, 3.50 times) to 3.75 times in each case at the end of the four fiscal quarters, beginning with December 31, 2020, and regardless of whether a permitted acquisition, as defined, is consummated, providing additional financing flexibility and access to liquidity. Additionally, the Sixth Amendment requires the Company to maintain a maximum ratio of Consolidated Total Debt, as defined, to Consolidated EBITDA, of not more than 3.75 times in each case, at the end of the four fiscal quarters, beginning with December 31, 2020, and regardless of whether a permitted acquisition is consummated. Furthermore, the First NPA Amendment provides for (i) adjustments to the ratio of Consolidated Total Debt to Consolidated EBITDA, as defined, to conform to a more restrictive total leverage ratio that may be required under the Sixth Amendment, (ii) an increase in the amount of allowable add-back for restructuring charges when calculating Consolidated EBITDA from $15,000 to $25,000 and (iii) a required fee payment equal to 0.50% per annum times the daily outstanding principal amount of the note during each of the four fiscal quarters, following the quarter ended December 31, 2020, if the Company's Senior Leverage Ratio, as defined, exceeds 3.25 times. In October 2020, the Company paid fees and expenses of $1,384 in conjunction with executing the Amendments. Such fees have been deferred within Other Assets on the accompanying Consolidated Balance Sheet and are being amortized into interest expense on the Consolidated Statements of Income.

On February 10, 2021, the Company and certain of its subsidiaries entered into the sixth amended and restated senior unsecured revolving credit agreement (the "Amended Credit Agreement") and retained Bank of America, N.A. as the Administrative Agent for the lenders. The Amended Credit Agreement maintains the $1,000,000 of availability under the

facility, while increasing the available borrowings under the accordion feature from $200,000 to $250,000 (aggregate availability of $1,250,000) and extends the maturity date through February 2026. The Amended Credit Agreement also adjusts the interest rate to either the Eurocurrency rate, as defined in the Amended Credit Agreement, plus a margin of 1.175% to 1.775% or the base rate, as defined in the Amended Credit Agreement, plus a margin of 0.175% to 0.775%, depending on the Company's leverage ratio at the time of the borrowing. Multi-currency borrowings, pursuant to the Amended Credit Agreement, bear interest at their respective interbank offered rate (i.e. Euribor) or 0.00% (higher of the two rates) plus a margin of between 1.175% and 1.775%. As with the earlier facility, the Company's borrowing capacity is limited by various debt covenants in the Amended Credit Agreement, as described further below. The Amended Credit Agreement required the Company to maintain a Senior Debt Ratio of not more than 3.75 times at the end of each fiscal quarter ending on or before September 30, 2021, after which the ratio reverted to 3.25 times (or, if a permitted acquisition above $150,000 is consummated, 3.50 times at the end of each of the first four fiscal quarters ending after the consummation of any such acquisition). In addition, the Amended Credit Agreement requires the Company to maintain a Total Debt Ratio of not more than 3.75 for each fiscal quarter (or, if a permitted acquisition above $150,000 is consummated, 4.25 times at the end of each of the first four fiscal quarters ending after the consummation of any such acquisition). A ratio of Consolidated EBITDA to Consolidated Cash Interest Expense, as defined, of not less than 4.25, is required at the end of each fiscal quarter. The Company paid fees and expenses of $4,306 in conjunction with executing the Amended Credit Agreement. Such fees have been deferred within Other Assets on the Consolidated Balance Sheets and are being amortized into interest expense on the Consolidated Statements of Income through their maturity. Cash used to pay these fees has been recorded through other financing activities on the Consolidated Statements of Cash Flows. The Company further amended the Amended Credit Agreement on October 11, 2021, defining certain applicable multi-currency borrowing rates that may be used as replacement rates for LIBOR, which is expected to be discontinued by reference rate reform. See Note 1.

Borrowings and availability under the Amended Credit Agreement were $495,262 and $504,738, respectively, at December 31, 2021 and borrowings and availability under the Sixth Amendment were $593,622 and $406,378, respectively, at December 31, 2020, subject to covenants in the Company's revolving debt agreements. At December 31, 2021, additional borrowings of $325,629 of Total Debt (including $201,723 of Senior Debt) would have been allowed under the financial covenants. The average interest rate on these borrowings was 1.48% and 1.42% on December 31, 2021 and 2020, respectively. Borrowings included Euro-denominated borrowings of 318,450 Euros ($360,262) at December 31, 2021 and 344,450 Euros ($423,622) at December 31, 2020. The fair value of the borrowings is based on observable Level 2 inputs. The borrowings were valued using discounted cash flows based upon the Company's estimated interest costs for similar types of borrowings.

At December 31, 2021, the Company was in compliance with all applicable covenants. The Company anticipates continued compliance in each of the next four quarters while continuing to monitor its future compliance based on current and future economic conditions. The Company's most restrictive financial covenant is the Senior Debt Ratio, which required the Company to maintain a ratio of Consolidated Senior Debt to Consolidated EBITDA of not more than 3.25 times at December 31, 2021. The actual ratio at December 31, 2021 was 2.44 times, as defined.

In addition, the Company has approximately $72,000 in uncommitted short-term bank credit lines ("Credit Lines") and overdraft facilities. The Credit Lines are accessed locally and are available primarily within the U.S., Europe and Asia. The Credit Lines are subject to the applicable borrowing rates within each respective country and vary between jurisdictions (i.e. LIBOR, Euribor, etc.). Under the Credit Lines, the Company had no borrowings at December 31, 2021 while $2,100 was borrowed at December 31, 2020 at an average interest rate of 1.10%. The Company had also borrowed $224 and $15 under the overdraft facilities at December 31, 2021 and 2020, respectively. Repayments under the Credit Lines are due within one month after being borrowed. Repayments of the overdrafts are generally due within two days after being borrowed. The carrying amounts of the Credit Lines and overdrafts approximate fair value due to the short maturities of these financial instruments.

The Company also has several finance leases under which $6,505 and $8,268 was outstanding at December 31, 2021 and December 31, 2020, respectively. The fair value of the finance leases are based on observable Level 2 inputs. These instruments were valued using discounted cash flows based upon the Company's estimated interest costs for similar types of borrowings.

Other debt includes bank acceptances and other foreign bank borrowings. Bank acceptances represent financial instruments accepted by certain China-based vendors in lieu of cash paid on payables, generally range from three to six months in maturity and are guaranteed by banks. The Company had $1,676 of bank acceptances outstanding at December 31, 2021. There were no bank acceptances outstanding at December 31, 2020. The carrying amounts of the bank acceptances approximate fair value due to the short maturities of these financial instruments. The Company had other foreign bank borrowings of $254 outstanding at December 31, 2020. There were no other foreign bank borrowings outstanding at December 31, 2021. The fair value of the other foreign bank borrowings outstanding at December 31, 2020 was based on observable Level 2 inputs. These

instruments were valued using discounted cash flows based upon the Company's estimated interest costs for similar types of borrowings.

Long-term debt and notes payable as of December 31, 2021 are payable as follows: $3,735 in 2022, $1,633 in 2023, $101,943 in 2024, $737 in 2025, $495,619 in 2026 and $0 thereafter. The amount payable under the Amended Credit Agreement at December 31, 2021 is included in 2026 based on the maturity date of the Amended Credit Agreement.

In addition, the Company had undrawn letters of credit totaling $8,417 at December 31, 2021.

Interest paid was $15,206, $15,088 and $20,248 in 2021, 2020 and 2019, respectively. Interest capitalized was $282, $348 and $498 in 2021, 2020 and 2019, respectively, and is being depreciated over the lives of the related fixed assets.

9. Business Reorganizations

In June 2020, the Company announced restructuring and workforce reduction actions ("Actions") which were implemented across its businesses and functions in response to the macroeconomic disruption in global industrial and aerospace end-markets arising from COVID-19. During 2020, a resulting pre-tax charge of $19,116 was recorded primarily related to employee severance and termination benefits. The Actions were substantially complete as of December 31, 2020 and reduced the Company’s global workforce by approximately 8%. A corresponding liability of $1,222, per below, remained and was included within accrued liabilities as of December 31, 2021. The Company does not expect any additional costs related to the Actions to be significant. The employee termination costs are recorded primarily within Selling and Administrative Expenses in the accompanying Consolidated Statements of Income. Of the aggregate charges recorded, $2,251 was reflected within the results of the Aerospace segment, $15,907 was reflected within the results of the Industrial segment and $958 of pension curtailment and settlement losses were included in Other expense (income), net.

The following table sets forth the change in the liability related to these actions:

January 1, 2020	$ —
Employee severance and other termination benefits	17,413
Payments	(4,262)
December 31, 2020	13,151
Employee severance and other termination benefits	(2,224)
Payments	(9,705)
December 31, 2021	$ 1,222

In 2021, the Company initiated additional restructuring actions ("Restructurings") at a number of locations. The Restructurings included a transfer of manufacturing capabilities to leverage existing capacity which is expected to reduce labor and infrastructure costs. The Restructurings resulted in pre-tax charges of $2,869, primarily related to employee severance and termination benefits, and have been recorded within Selling and Administrative Expenses in the accompanying Consolidated Statements of Income. The Company expects to incur additional charges of approximately $1,700 related to these Restructurings through 2022.

10. Derivatives

The Company has manufacturing, service and sales facilities around the world and thus makes investments and conducts business transactions denominated in various currencies. The Company is also exposed to fluctuations in interest rates and commodity price changes. These financial exposures are monitored and managed by the Company as an integral part of its risk management program.

Derivative financial instruments have been used by the Company to hedge its exposure to fluctuations in interest rates. On April 28, 2017, the Company entered into an interest rate swap agreement (the "2017 Swap") with one bank which converted the interest on the first $100,000 of the Company's one-month LIBOR-based borrowings from a variable rate plus the borrowing spread to a fixed rate of 1.92% plus the borrowing spread. The 2017 Swap expired on January 31, 2022. On March 24, 2021, the Company entered into a new interest rate swap agreement (the "2021 Swap") with this same bank that commenced on January 31, 2022 and that converts the interest on the first $100,000 of the Company's one-month LIBOR-based

borrowings from a variable rate plus the borrowing spread to a fixed rate of 1.17% plus the borrowing spread. The 2021 Swap expires on January 30, 2026. These interest rate swap agreements (collectively, the "Swaps") remained in place at December 31, 2021 and are accounted for as cash flow hedges.

The Company also uses derivative financial instruments to hedge its exposures to fluctuations in foreign currency exchange rates. The Company has various contracts outstanding which primarily hedge recognized assets or liabilities and anticipated transactions in various currencies including the Euro, British pound sterling, U.S. dollar, Canadian dollar, Japanese yen, Singapore dollar, Korean won, Swedish kroner, Chinese renminbi, Mexican peso, Hong Kong dollar and Swiss franc. Certain foreign currency derivative instruments are treated as cash flow hedges of forecasted transactions. All foreign exchange contracts are due within two years.

The Company does not use derivatives for speculative or trading purposes or to manage commodity exposures.

The Company records the derivatives at fair value on the Consolidated Balance Sheets within Prepaid Expenses and Other Current Assets, Other Assets, Accrued Liabilities or Other Liabilities depending on their fair value and remaining contractual period. Changes in the fair market value of derivatives accounted for as cash flow hedges are recorded to accumulated other comprehensive income (loss) and reclassified to earnings in a manner that matches the earnings impact of the hedged transaction. Reclassifications to earnings for the Swaps are recorded through interest expense and reclassifications to earnings for foreign exchange contracts are recorded through net sales. Changes in the fair market value of the foreign exchange contracts that are not designated hedging instruments are recorded directly to earnings through Other expense (income), net.

The fair values of derivatives were not material to the Company's Consolidated Balance Sheets as of December 31, 2021 or December 31, 2020. See Note 11. The activity related to the derivatives that have been designated hedging instruments was not material to the Company's Consolidated Financial Statements for the periods ended December 31, 2021, 2020, or 2019. The Company recognized (losses) and gains of $(2,494), $5,631 and $(8,250) related to the foreign exchange contracts that are not accounted for as hedging instruments within other expense (income), net, in the Consolidated Statements of Income for the periods ended December 31, 2021, 2020, and 2019, respectively. During 2021 and 2020, such gains (losses) were substantially offset by net losses (gains) recorded on the underlying hedged asset or liability (the "underlying"). During 2019, approximately half of the loss recognized was offset by a net gain recorded on the underlying. Offsetting net gains or losses on the underlying are also recorded within Other expense (income), net.

The Company's policy for classifying cash flows from derivatives is to report the cash flows consistent with the underlying hedged item. Other financing cash flows during the years ended December 31, 2021, 2020 and 2019, as presented on the Consolidated Statements of Cash Flows, include $766, $(5,587) and $7,538, respectively, of net cash payments (proceeds) related to the settlement of foreign currency hedges related to intercompany financing.

11. Fair Value Measurements

The provisions of the accounting standard for fair value define fair value as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. This standard classifies the inputs used to measure fair value into the following hierarchy:

Level 1 Unadjusted quoted prices in active markets for identical assets or liabilities.

Level 2 Unadjusted quoted prices in active markets for similar assets or liabilities, or unadjusted quoted prices for identical or similar assets or liabilities in markets that are not active, or inputs other than quoted prices that are observable for the asset or liability.

Level 3 Unobservable inputs for the asset or liability.

The following table provides the assets and liabilities reported at fair value and measured on a recurring basis as of December 31, 2021 and 2020:

	Total	Fair Value Measurements Using		
		Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
December 31, 2021				
Asset derivatives	**$ 375**	**$ —**	**$ 375**	**$ —**
Liability derivatives	**(107)**	**—**	**(107)**	**—**
Bank acceptances	**13,240**	**—**	**13,240**	**—**
Rabbi trust assets	**3,001**	**3,001**	**—**	**—**
	$ 16,509	**$ 3,001**	**$ 13,508**	**$ —**
December 31, 2020				
Asset derivatives	$ 1,642	$ —	$ 1,642	$ —
Liability derivatives	(1,988)	—	(1,988)	—
Bank acceptances	13,267	—	13,267	—
Rabbi trust assets	3,233	3,233	—	—
	$ 16,154	$ 3,233	$ 12,921	$ —

The derivative contracts are valued using observable current market information as of the reporting date such as the prevailing LIBOR-based interest rates and foreign currency spot and forward rates. Bank acceptances represent financial instruments accepted from certain China-based customers in lieu of cash paid on receivables, have maturities of one year or less and are guaranteed by banks. The carrying amounts of the bank acceptances, which are included within prepaid expenses and other current assets, approximate fair value due to their short maturities. The fair values of rabbi trust assets are based on quoted market prices from various financial exchanges. For disclosures of the fair values of the Company's pension plan assets, see Note 12.

12. Pension and Other Postretirement Benefits

The accounting standards related to employers' accounting for defined benefit pension and other postretirement plans requires the Company to recognize the funded status of its defined benefit postretirement plans as assets or liabilities in the accompanying consolidated balance sheets and to recognize changes in the funded status of the plans in comprehensive income.

The Company has various defined contribution plans, the largest of which is its Retirement Savings Plan. Most U.S. salaried and non-union hourly employees are eligible to participate in this plan. See Note 17 for further discussion of the Retirement Savings Plan. The Company also maintains various other defined contribution plans which cover certain other employees. Company contributions under certain of these plans are based on the performance of the business units and employee compensation. Contribution expense under these other defined contribution plans was $5,475, $5,301 and $6,874 in 2021, 2020 and 2019, respectively.

Defined benefit pension plans in the U.S. cover a majority of the Company's U.S. employees at the Engineered Components and Force & Motion Control businesses of Industrial, certain former U.S. employees, including retirees, and a portion of employees at the Company's Corporate Office. Employees at certain international businesses within Industrial are also covered by defined benefit pension plans. Plan benefits for salaried and non-union hourly employees are based on years of service and average salary. Plans covering union hourly employees provide benefits based on years of service. The Company funds U.S. pension costs in accordance with the Employee Retirement Income Security Act of 1974, as amended ("ERISA"). Non-U.S. defined benefit pension plans cover certain employees of certain international locations in Europe and Canada.

The Company provides other medical, dental and life insurance postretirement benefits for certain of its retired employees in the U.S. and Canada. It is the Company's practice to fund these benefits as incurred.

The accompanying balance sheets reflect the funded status of the Company's defined benefit pension plans at December 31, 2021 and 2020. Reconciliations of the obligations and funded status of the plans follow:

	2021			2020		
	U.S.	**Non-U.S.**	**Total**	**U.S.**	**Non-U.S.**	**Total**
Benefit obligation, January 1	**$ 461,296**	**$ 96,508**	**$ 557,804**	$ 430,625	$ 87,031	$ 517,656
Service cost	**4,378**	**2,169**	**6,547**	4,134	2,135	6,269
Interest cost	**11,963**	**786**	**12,749**	14,015	1,069	15,084
Amendments	**862**	**—**	**862**	—	1,014	1,014
Actuarial (gain) loss	**(10,734)**	**(3,747)**	**(14,481)**	37,709	2,812	40,521
Benefits paid	**(25,009)**	**(4,499)**	**(29,508)**	(25,049)	(3,422)	(28,471)
Transfers in	**—**	**2,468**	**2,468**	—	767	767
Plan curtailments	**—**	**(603)**	**(603)**	(138)	—	(138)
Plan settlements	**—**	**(2,464)**	**(2,464)**	—	(2,165)	(2,165)
Participant contributions	**—**	**1,171**	**1,171**	—	1,127	1,127
Foreign exchange rate changes	**—**	**(2,329)**	**(2,329)**	—	6,140	6,140
Benefit obligation, December 31	**442,756**	**89,460**	**532,216**	461,296	96,508	557,804
Fair value of plan assets, January 1	**413,898**	**88,880**	**502,778**	380,242	82,265	462,507
Actual return on plan assets	**30,880**	**2,214**	**33,094**	55,813	3,849	59,662
Company contributions	**2,794**	**1,403**	**4,197**	2,892	1,545	4,437
Participant contributions	**—**	**1,171**	**1,171**	—	1,127	1,127
Benefits paid	**(25,009)**	**(4,499)**	**(29,508)**	(25,049)	(3,422)	(28,471)
Plan settlements	**—**	**(2,464)**	**(2,464)**	—	(2,165)	(2,165)
Transfers in	**—**	**2,468**	**2,468**	—	767	767
Foreign exchange rate changes	**—**	**(1,807)**	**(1,807)**	—	4,914	4,914
Fair value of plan assets, December 31	**422,563**	**87,366**	**509,929**	413,898	88,880	502,778
Underfunded status, December 31	**$ (20,193)**	**$ (2,094)**	**$ (22,287)**	$ (47,398)	$ (7,628)	$ (55,026)

Benefit obligations decreased in 2021 primarily due to actuarial gains, resulting largely from increases in the discount rate, and the payment of benefits to plan participants, partially offset by interest costs. Benefit obligations increased in 2020 primarily due to actuarial losses, resulting largely from declines in discount rates, and interest costs, partially offset by the payment of benefits to plan participants.

Projected benefit obligations related to pension plans with benefit obligations in excess of plan assets follow:

	2021			2020		
	U.S.	**Non-U.S.**	**Total**	**U.S.**	**Non-U.S.**	**Total**
Projected benefit obligation	**$ 43,184**	**$ 49,272**	**$ 92,456**	$ 352,062	$ 52,481	$ 404,543
Fair value of plan assets	**5,592**	**34,463**	**40,055**	298,966	34,947	333,913

Information related to pension plans with accumulated benefit obligations in excess of plan assets follows:

	2021			2020		
	U.S.	**Non-U.S.**	**Total**	**U.S.**	**Non-U.S.**	**Total**
Accumulated benefit obligation	**$ 43,108**	**$ 49,131**	**$ 92,239**	$ 340,158	$ 52,357	$ 392,515
Fair value of plan assets	**5,592**	**34,463**	**40,055**	298,966	34,947	333,913

The accumulated benefit obligation for all defined benefit pension plans was $520,356 and $545,918 at December 31, 2021 and 2020, respectively.

Amounts related to pensions recognized in the accompanying balance sheets consist of:

	2021			2020		
	U.S.	Non-U.S.	Total	U.S.	Non-U.S.	Total
Other assets	**$ 17,399**	**$ 12,715**	**$ 30,114**	$ 5,698	$ 9,906	$ 15,604
Accrued liabilities	**3,160**	**—**	**3,160**	3,204	—	3,204
Accrued retirement benefits	**34,432**	**14,809**	**49,241**	49,892	17,534	67,426
Accumulated other non-owner changes to equity, net	**(96,425)**	**(13,684)**	**(110,109)**	(118,951)	(19,132)	(138,083)

Amounts related to pensions recognized in accumulated other non-owner changes to equity, net of tax, at December 31, 2021 and 2020, respectively, consist of:

	2021			2020		
	U.S.	Non-U.S.	Total	U.S.	Non-U.S.	Total
Net actuarial loss	**$ (94,496)**	**$ (13,095)**	**$ (107,591)**	$ (117,409)	$ (18,687)	$ (136,096)
Prior service costs	**(1,929)**	**(589)**	**(2,518)**	(1,542)	(445)	(1,987)
	$ (96,425)	**$ (13,684)**	**$ (110,109)**	$ (118,951)	$ (19,132)	$ (138,083)

The accompanying balance sheets reflect the underfunded status of the Company's other postretirement benefit plans at December 31, 2021 and 2020. Reconciliations of the obligations and underfunded status of the plans follow:

	2021	2020
Benefit obligation, January 1	**$ 33,104**	$ 33,239
Service cost	**103**	81
Interest cost	**819**	1,041
Actuarial (gain) loss	**(2,115)**	950
Benefits paid	**(2,690)**	(3,203)
Participant contributions	**589**	960
Foreign exchange rate changes	**29**	36
Benefit obligation, December 31	**29,839**	33,104
Fair value of plan assets, January 1	**—**	—
Company contributions	**2,101**	2,243
Participant contributions	**589**	960
Benefits paid	**(2,690)**	(3,203)
Fair value of plan assets, December 31	**—**	—
Underfunded status, December 31	**$ 29,839**	$ 33,104

Benefit obligations decreased in 2021 primarily due to increases in actuarial gains, resulting largely from increases in the discount rate, and by the payment of benefits to plan participants. Benefit obligations remained flat in 2020 as benefit payments offset an increase in actuarial losses, driven by declines in the discount rate, and interest cost.

Amounts related to other postretirement benefits recognized in the accompanying balance sheets consist of:

	2021	2020
Accrued liabilities	**$ 2,883**	$ 3,114
Accrued retirement benefits	**26,956**	29,990
Accumulated other non-owner changes to equity, net	**(2,198)**	(4,036)

Amounts related to other postretirement benefits recognized in accumulated other non-owner changes to equity, net of tax, at December 31, 2021 and 2020 consist of:

	2021	2020
Net actuarial loss	**$ (2,141)**	$ (3,979)
Prior service loss	**(57)**	(57)
	$ (2,198)	$ (4,036)

The sources of changes in accumulated other non-owner changes to equity, net, during 2021 were:

	Pension	Other Postretirement Benefits
Prior service cost	**$ (657)**	**$ —**
Net gain	**15,679**	**1,620**
Amortization of prior service costs	**136**	**22**
Amortization of actuarial loss	**12,431**	**198**
Foreign exchange rate changes	**385**	**(2)**
	$ 27,974	**$ 1,838**

Weighted-average assumptions used to determine benefit obligations as of December 31, are:

	2021	2020
U.S. plans:		
Discount rate	**2.95 %**	2.65 %
Increase in compensation	**3.03 %**	2.56 %
Non-U.S. plans:		
Discount rate	**1.17 %**	0.83 %
Increase in compensation	**2.77 %**	2.75 %
Interest crediting rate	**1.34 %**	1.34 %

The investment strategy of the plans is to generate a consistent total investment return sufficient to pay present and future plan benefits to retirees, while minimizing the long-term cost to the Company. Target allocations for asset categories are used to earn a reasonable rate of return, provide required liquidity and minimize the risk of large losses. Targets may be adjusted, as necessary, to reflect trends and developments within the overall investment environment. The weighted-average target investment allocations by asset category were as follows during 2021: 65% in equity securities and 35% in fixed income securities, including cash.

The fair values of the Company's pension plan assets at December 31, 2021 and 2020 by asset category are as follows:

		Fair Value Measurements Using		
Asset Category	Total	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
December 31, 2021				
Cash and short-term investments	**$ 4,195**	**$ 4,195**	**$ —**	$ —
Equity securities:				
U.S. large-cap	**49,079**	**—**	**49,079**	—
U.S. mid-cap	**19,469**	**19,469**	**—**	—
U.S. small-cap	**18,795**	**18,795**	**—**	—
International equities	**136,557**	**—**	**136,557**	—
Global equity	**60,393**	**60,393**	**—**	—
Fixed income securities:				
U.S. bond funds	**143,035**	**—**	**143,035**	—
International bonds	**75,515**	**—**	**75,515**	—
Other	**2,891**	**—**	**—**	**2,891**
	$ 509,929	**$ 102,852**	**$ 404,186**	**$ 2,891**
December 31, 2020				
Cash and short-term investments	3,678	3,678	—	—
Equity securities:				
U.S. large-cap	44,693	—	44,693	—
U.S. mid-cap	20,346	20,346	—	—
U.S. small-cap	19,422	19,422	—	—
International equities	153,315	—	153,315	—
Global equity	55,552	55,552	—	—
Fixed income securities:				
U.S. bond funds	125,309	—	125,309	—
International bonds	77,221	—	77,221	—
Other	3,242	—	—	3,242
	$ 502,778	$ 98,998	$ 400,538	$ 3,242

The fair values of the Level 1 assets are based on quoted market prices from various financial exchanges. The fair values of the Level 2 assets are based primarily on quoted prices in active markets for similar assets or liabilities. The Level 2 assets are comprised primarily of commingled equity funds and fixed income securities. Commingled equity funds are valued at their net asset values based on quoted market prices of the underlying assets. Fixed income securities are valued using a market approach which considers observable market data for the underlying asset or securities. The Level 3 assets relate to a defined benefit plan within the Molding Solutions business. These pension assets are fully insured and have been estimated based on accrued pension rights and actuarial rates. These pension assets are limited to fulfilling the Company's pension obligations.

The Company expects to contribute approximately $4,617 to the pension plans in 2022. No contributions to the U.S. Qualified pension plans, specifically, are required, and the Company does not currently plan to make any discretionary contributions to such plans in 2022.

The following are the estimated future net benefit payments, which include future service, over the next 10 years:

	Pensions	Other Postretirement Benefits
2022	**$ 29,285**	**$ 2,883**
2023	**29,499**	**2,676**
2024	**29,790**	**2,493**
2025	**29,556**	**2,339**
2026	**29,288**	**2,167**
Years 2027-2031	**148,523**	**9,144**
Total	**$ 295,941**	**$ 21,702**

Pension and other postretirement benefit costs consist of the following:

	Pensions			Other Postretirement Benefits		
	2021	2020	2019	2021	2020	2019
Service cost	**$ 6,547**	$ 6,269	$ 5,425	**$ 103**	$ 81	$ 70
Interest cost	**12,749**	15,084	18,239	**819**	1,041	1,345
Expected return on plan assets	**(27,858)**	(29,698)	(29,425)	**—**	—	—
Amortization of prior service cost	**332**	359	404	**29**	27	25
Recognized losses	**16,006**	13,626	8,889	**258**	35	13
Curtailment (gain)/loss	**(133)**	484	—	**—**	—	—
Settlement loss	**205**	549	340	**—**	—	—
Net periodic benefit cost	**$ 7,848**	$ 6,673	$ 3,872	**$ 1,209**	$ 1,184	$ 1,453

The curtailment loss of $484 and a majority of the settlement loss of $549 in 2020 relate to the restructuring and workforce reduction actions that were taken during the period. See Note 9.

The components of net periodic benefit cost other than service cost are included in Other Expense (Income) on the Consolidated Statements of Income.

Weighted-average assumptions used to determine net periodic benefit cost for years ended December 31 are:

	2021	2020	2019
U.S. plans:			
Discount rate	**2.65 %**	3.40 %	4.40 %
Long-term rate of return	**7.25 %**	7.75 %	7.75 %
Increase in compensation	**2.56 %**	2.56 %	2.56 %
Non-U.S. plans:			
Discount rate	**0.83 %**	1.28 %	2.07 %
Long-term rate of return	**1.96 %**	3.02 %	3.90 %
Increase in compensation	**2.75 %**	2.75 %	2.72 %
Interest crediting rate	**1.34 %**	1.34 %	1.03 %

The expected long-term rate of return is based on consideration of projected rates of return and the historical rates of return of published indices that reflect the plans' target asset allocation.

The Company's accumulated postretirement benefit obligations, exclusive of pensions, take into account certain cost-sharing provisions. The annual rate of increase in the cost of covered benefits (i.e., health care cost trend rate) is assumed to be 6.56% and 5.70% at December 31, 2021 and 2020, respectively, decreasing gradually to a rate of 4.00% by December 31, 2046.

The Company actively contributes to a Swedish pension plan that supplements the Swedish social insurance system. The pension plan guarantees employees a pension based on a percentage of their salary and represents a multi-employer pension plan, however the pension plan was not significant in any year presented. This pension plan is not underfunded.

Contributions related to the individually insignificant multi-employer plans, as disclosure is required pursuant to the applicable accounting standards, are as follows:

	Contributions by the Company		
Pension Fund:	**2021**	**2020**	**2019**
Swedish Pension Plan	**835**	**$ 783**	**$ 754**
Total Contributions	**$ 835**	**$ 783**	**$ 754**

13. Stock-Based Compensation

The Company measures the cost of all share-based payments, including stock options, at fair value on the grant date and recognizes this cost in the results of operations, net of expected forfeitures. The fair values of stock options are estimated on the grant date using the Black-Scholes option-pricing model based on certain assumptions. The fair values of service and performance based stock awards are estimated based on the fair market value of the Company's stock price on the grant date. The fair value of market based performance share awards are estimated on the grant date using the Monte Carlo valuation method.

Refer to Note 17 for a description of the Company's stock-based compensation plans and their general terms. As of December 31, 2021, incentives have been awarded in the form of performance share awards and restricted stock unit awards (collectively, "Rights") and stock options. The Company has elected to use the straight-line method to recognize compensation costs. Stock options and awards typically vest over a period ranging from six months to five years. The maximum term of stock option awards is 10 years. Upon exercise of a stock option or upon vesting of Rights, shares may be issued from treasury shares held by the Company or from authorized shares.

During 2021, 2020 and 2019, the Company recognized $11,470, $10,300, and $13,306, respectively, of stock-based compensation cost and $2,263, $2,198, and $2,805, respectively, of related tax benefits in the accompanying consolidated statements of income. Additionally, the Company recognized excess tax (expense) benefits in the tax provision of $(523), $(579) and $1,952 in 2021, 2020 and 2019, respectively. The Company has realized all available tax benefits related to deductions from excess stock awards exercised or Rights vested. At December 31, 2021, the Company had $17,910 of unrecognized compensation costs related to unvested awards which are expected to be recognized over a weighted average period of 1.73 years.

The following table summarizes information about the Company's stock option awards during 2021:

	Number of Shares	Weighted-Average Exercise Price
Outstanding, January 1, 2021	**645,605**	**$ 49.29**
Granted	**154,314**	**52.73**
Exercised	**(33,305)**	**32.53**
Forfeited	**—**	**—**
Outstanding, December 31, 2021	**766,614**	**50.71**

The following table summarizes information about stock options outstanding at December 31, 2021:

	Options Outstanding				Options Exercisable		
Range of Exercise Prices	Number of Shares	Average Remaining Life (Years)		Average Exercise Price	Number of Shares		Average Exercise Price
$24.24 to $36.31	**176,200**	**3.61**	**$**	**33.11**	**176,200**	**$**	**33.11**
$37.13 to $47.04	**124,423**	**4.78**		**45.52**	**120,808**		**45.77**
$51.55 to $59.28	**263,823**	**7.83**		**55.43**	**104,249**		**59.24**
$59.46 to $66.10	**202,168**	**7.33**		**63.09**	**106,989**		**62.43**

The Company received cash proceeds from the exercise of stock options of $1,083, $1,596 and $5,029 in 2021, 2020 and 2019, respectively. The total intrinsic value (the amount by which the stock price exceeds the exercise price of the option on the date of exercise) of the stock options exercised during 2021, 2020 and 2019 was $439, $781 and $5,324, respectively.

The weighted-average grant date fair value of stock options granted in 2021, 2020 and 2019 was $17.30, $14.69 and $14.04, respectively. The fair value of each stock option grant on the date of grant was estimated using the Black-Scholes option-pricing model based on the following weighted average assumptions:

	2021	2020	2019
Risk-free interest rate	**0.55 %**	1.45 %	2.43 %
Expected life (years)	**5.5**	5.5	5.5
Expected volatility	**40.0 %**	26.0 %	25.0 %
Expected dividend yield	**1.23 %**	1.25 %	1.43 %

The risk-free interest rate is based on the term structure of interest rates at the time of the option grant. The expected life represents an estimate of the period of time that options are expected to remain outstanding. Assumptions of expected volatility of the Company's common stock and expected dividend yield are estimates of future volatility and dividend yields based on historical trends.

The following table summarizes information about stock options outstanding that are expected to vest and stock options outstanding that are exercisable at December 31, 2021:

Options Outstanding, Expected to Vest							Options Outstanding, Exercisable						
Shares		Weighted-Average Exercise Price		Aggregate Intrinsic Value	Weighted-Average Remaining Term (Years)		Shares		Weighted-Average Exercise Price		Aggregate Intrinsic Value	Weighted-Average Remaining Term (Years)	
754,648	$	50.71	$	2,516	6.24		508,246	$	47.65	$	2,522	5.04	

The following table summarizes information about the Company's Rights during 2021:

	Service Based Rights		Service and Performance Based Rights		Service and Market Based Rights	
	Number of Units	Weighted-Average Grant Date Fair Value	Number of Units	Weighted-Average Grant Date Fair Value	Number of Units	Weighted-Average Grant Date Fair Value
Outstanding, January 1, 2021	**227,425**	**$ 52.59**	**148,426**	**$ 61.71**	**74,213**	**$ 100.47**
Granted	**162,698**	**49.34**	**71,265**	**54.42**	**35,648**	**84.86**
Forfeited	**(14,258)**	**56.53**	**(2,063)**	**47.23**	**(1,030)**	**94.55**
Additional Earned	—	—	**(36,048)**	**59.28**	**(14,550)**	**88.98**
Issued	**(116,758)**	**47.23**	**(7,383)**	**59.28**	**(7,166)**	**88.98**
Outstanding, December 31, 2021	**259,107**		**174,197**		**87,115**	

The Company granted 162,698 restricted stock unit awards and 106,913 performance share awards in 2021. All of the restricted stock unit awards vest upon meeting certain service conditions. "Additional Earned" reflects performance share awards earned above target that have been issued. The performance share awards are part of the long-term Performance Share Award Program (the "Awards Program"), which is designed to assess the long-term Company performance relative to the performance of companies included in the Russell 2000 Index or to pre-established goals. The performance goals are independent of each other and based on equally weighted metrics. For awards granted in 2021, 2020 and 2019, the metrics included the Company's total shareholder return ("TSR"), operating income before depreciation and amortization growth ("EBITDA growth") and return on invested capital ("ROIC"). The TSR and EBITDA growth metrics are designed to assess the long-term Company performance relative to the performance of companies included in the Russell 2000 Index over a three-year period. ROIC is designed to assess the Company's performance compared to pre-established goals over a three-year performance period. The participants can earn from zero to 250% of the target award and the award includes a forfeitable right to dividend equivalents, which are not included in the aggregate target award numbers. Compensation expense for the awards is recognized over the three-year service period based upon the value determined under the intrinsic value method for EBITDA growth and ROIC portions of the award and the Monte Carlo simulation valuation model for the TSR portion of the award since it contains a market condition. The assumptions used to determine the weighted-average fair values of the market based portion of the 2021 awards include a 0.55% risk-free interest rate and a 50.2% expected volatility rate.

Compensation expense for the TSR portion of the awards is fixed at the date of grant and will not be adjusted in future periods based upon the achievement of the TSR performance goal. Compensation expense for the EBITDA growth and the ROIC portions of the awards is recorded each period based upon a probability assessment of achieving the goals with a final adjustment at the end of the service period based upon the actual achievement of those performance goals.

14. Income Taxes

The components of Income from continuing operations before income taxes and Income taxes follow:

	2021	2020	2019
Income from continuing operations before income taxes:			
U.S.	**$ (28,832)**	$ (21,538)	$ 2,424
International	**156,649**	123,033	204,420
Income from continuing operations before income taxes	**$ 127,817**	$ 101,495	$ 206,844
Income tax provision:			
Current:			
U.S. – federal	**$ 4,733**	$ 3,697	$ 2,068
U.S. – state	**1,009**	(92)	(1,873)
International	**38,609**	41,506	60,866
	44,351	45,111	61,061
Deferred:			
U.S. – federal	**$ (6,800)**	$ 1,914	$ (1,356)
U.S. – state	**(1,051)**	222	344
International	**(8,556)**	(9,127)	(11,555)
	(16,407)	(6,991)	(12,567)
Income taxes	**$ 27,944**	$ 38,120	$ 48,494

The Company has recognized a deferred tax liability for foreign withholding taxes of $185 on $3,501 of undistributed earnings of its international subsidiaries, earned before 2017. All remaining earnings are considered indefinitely reinvested as defined per the indefinite reversal criterion within the accounting guidance for income taxes. If the earnings were distributed in the form of dividends, the Company would not be subject to U.S. Tax but could be subject to foreign income and withholding taxes. Determination of the amount of this unrecognized deferred income tax liability is not practicable. The Company repatriated dividends of $68,262 and $85,000, as noted above, to the U.S. from accumulated foreign earnings in 2021 and 2020, respectively. On December 31, 2021, the Company's unremitted foreign earnings were approximately $1,712,000.

Deferred income tax assets and liabilities at December 31 consist of the tax effects of temporary differences related to the following:

	2021	2020
Deferred tax assets:		
Pension	**$ 8,803**	$ 15,403
Tax loss carryforwards	**11,067**	9,521
Inventory valuation	**10,660**	10,642
Other postretirement/postemployment costs	**7,741**	7,735
Accrued compensation	**9,775**	8,085
Goodwill	**14,960**	4,006
Lease obligation	**9,790**	9,846
Other	**16,609**	12,302
Valuation allowance	**(3,869)**	(3,757)
Total deferred tax assets	**85,536**	73,784
Deferred tax liabilities:		
Depreciation and amortization	**(94,286)**	(109,391)
Goodwill	**(9,909)**	(9,850)
Swedish tax incentive	**(8,531)**	(9,170)
Right of use liability	**(9,826)**	(9,758)
Other	**(7,712)**	(5,191)
Total deferred tax liabilities	**(130,264)**	(143,360)
Net deferred tax liabilities	**$ (44,728)**	$ (69,576)

Amounts related to deferred taxes in the balance sheets as of December 31, 2021 and 2020 are presented as follows:

	2021	2020
Non-current deferred tax assets	**$ 21,976**	$ 22,092
Non-current deferred tax liabilities	**(66,704)**	(91,668)
Net deferred tax liabilities	**$ (44,728)**	$ (69,576)

The standards related to accounting for income taxes require that deferred tax assets be reduced by a valuation allowance if, based on all available evidence, it is more likely than not that the deferred tax asset will not be realized. Available evidence includes the reversal of existing taxable temporary differences, future taxable income exclusive of temporary differences, taxable income in carryback years and tax planning strategies.

In the second quarter of 2021, the Italian tax authorities released tax guidance related to the application of tax basis realignment rules for intangible property ("Realignment") which provides Italian taxpayers with the opportunity to step up the basis of goodwill and intangibles to their fair market value and amortize the step up over 18 years for tax purposes in exchange for paying a 3% tax on the step up, payable over a three years period. The Company opted to elect the Realignment in June 2021 and accordingly recorded a tax payable of $3,008 and a long-term tax payable of $6,016. The Company made its first required installment payment of $3,008 during the third quarter of 2021, reducing the long-term tax payable accordingly. The Company also recorded a deferred tax asset of $83,921 related to the Realignment. Accounting guidance requires that when a deferred tax asset is realigned for tax purposes, a corresponding revaluation reserve also be recorded. Under Italian tax rules, any dividends paid out of this revaluation reserve are subject to tax at a 24% rate. Accordingly, the Company recorded a deferred tax liability of $72,190 related to the potential 24% tax due on any dividends, paid out of the revaluation reserve. The deferred tax asset and liability balances have been presented on a net basis on the Consolidated Balance Sheets. The Company also recorded a one-time $2,707 benefit to the provision related to this election and related accounting. In December 2021 the Italian government increased the amortization period to 50 years; however the change has no impact on the accounting for the transaction as reported above.

The realization of these assets is dependent in part on the amount and timing of future taxable income in the jurisdictions where deferred tax assets reside. As of December 31, 2021, the Company has gross tax loss carryforwards of $35,965; $3,619 of which relates to U.S tax loss carryforwards which have carryforward periods up to 20 years for federal purposes and ranging from one to 20 years for state purposes; $3,778 of which relates to international tax loss carryforwards with carryforward periods ranging from one to twenty years; and $28,568 of which relates to international tax loss carryforwards with unlimited carryforward periods. In addition, the Company has tax credit carryforwards of $417 with remaining carryforward periods ranging from one to five years. Currently the Company has a valuation allowance of $3,503 and $366 related to loss carryforwards and credit carryforwards, respectively, as it believes it is more likely than not that future income will not be earned to timely utilize certain net operating losses or credit carryforwards which have expiration dates. As the ultimate realization of the remaining net deferred tax assets is dependent upon future taxable income, if such future taxable income is not earned and it becomes necessary to recognize a valuation allowance, it could result in a material increase in the Company's tax expense which could have a material adverse effect on the Company's financial condition and results of operations.

Management is required to assess whether its valuation allowance analysis is affected by various components of tax law including future GILTI inclusions, changes to the deductibility of executive compensation and interest expense and changes to the NOL and FTC rules. The Company has determined that a valuation allowance of $638 is appropriate relating to deferred taxes recognized for stock compensation granted to executives which the Company believes will not be deductible in future years.

A reconciliation of the U.S. federal statutory income tax rate to the consolidated effective income tax rate from continuing operations follows:

	2021	2020	2019
U.S. federal statutory income tax rate	**21.0 %**	21.0 %	21.0 %
State taxes (net of federal benefit)	**—**	—	0.1
Foreign operations taxed at different rates	**0.1**	5.6	2.0
Foreign losses without tax benefit	**1.9**	3.0	2.0
Foreign tax rate change	**0.4**	—	—
Italian goodwill & intangible realignment	**(2.1)**	—	—
GILTI	**2.3**	3.0	0.6
Tax holidays	**(2.5)**	(1.0)	(1.3)
Stock awards excess tax expense/(benefit)	**0.4**	0.6	(0.9)
Audit settlements including MAP application	**(1.5)**	0.2	0.3
Adjustment to prior years tax return	**1.0**	—	—
Tax on Seeger transaction	**—**	4.9	—
Benefit for change in valuation allowances	**—**	(0.5)	(0.3)
Other	**0.9**	0.8	(0.1)
Consolidated effective income tax rate	**21.9 %**	37.6 %	23.4 %

In 2019 and 2017, the Company recorded additional income taxes resulting from audits at certain subsidiaries in Germany. The Company filed applications with the Internal Revenue Service ("IRS") under the Mutual Aid Process ("MAP") to allow for offsetting positions within the US tax filings for the Germany-related adjustments. In 2021 the MAP applications were approved by the IRS. The Company recognized a tax benefit of $1,967 in 2021 to reflect the tax benefit realized as a result of the IRS approval.

Payment of the Transition Tax assessed is required over an eight-year period. The short-term portion of the Transition Tax payable, $6,949, has been included within Accrued Liabilities on the Consolidated Balance Sheet as of December 31, 2021. The long-term portion of the assessment, $52,114, is included as a long-term tax liability on the Consolidated Balance Sheet and is payable as follows: $6,949 in 2022; $13,029 in 2023; $17,371 in 2024 and $21,714 in 2025.

The Aerospace and Industrial segments have a number of multi-year tax holidays in Singapore, China and Malaysia. Tax benefits of $3,219 ($0.06 per diluted share), $1,065 ($0.02 per diluted share) and $2,718 ($0.05 per diluted share) were realized in 2021, 2020 and 2019, respectively. These holidays are subject to the Company meeting certain commitments in the

respective jurisdictions. Aerospace was granted an income tax holiday for operations recently established in Malaysia. This holiday commenced effective November 2020 and remains effective for a period of ten years. The China tax holiday expired at the end of 2020 and a new holiday was granted in December 2021. The holiday is effective for three years beginning with the 2021 tax year. The Singapore tax holiday is scheduled to expire in December 2022.

Income taxes paid globally, net of refunds, were $58,324, $60,427, and $59,003 in 2021, 2020 and 2019, respectively.

As of December 31, 2021, 2020 and 2019, the total amount of unrecognized tax benefits recorded in the consolidated balance sheet was $8,671, $9,156 and $8,919, respectively, which, if recognized, would have reduced the effective tax rate in prior years, with the exception of amounts related to acquisitions. A reconciliation of the unrecognized tax benefits for 2021, 2020 and 2019 follows:

	2021	2020	2019
Balance at January 1	**$ 9,156**	$ 8,919	$ 11,594
Increase (decrease) in unrecognized tax benefits due to:			
Tax positions taken during prior periods	**—**	550	11
Tax positions taken during the current period	**637**	649	1,114
Settlements	**(70)**	—	(1,351)
Lapse of the applicable statute of limitations	**(1,218)**	(900)	(2,344)
Foreign currency translation	**166**	(62)	(105)
Balance at December 31	**$ 8,671**	$ 9,156	$ 8,919

The Company recognizes interest and penalties, if any, related to unrecognized tax benefits in income tax expense. The Company recognized interest and penalties as a component of income taxes of $(93), $(196), and $(206) in the years 2021, 2020 and 2019, respectively. The liability for unrecognized tax benefits includes gross accrued interest and penalties of $3,582, $3,675 and $3,906 at December 31, 2021, 2020 and 2019, respectively.

The Company or its subsidiaries file income tax returns in the U.S. federal jurisdiction, and various state and foreign jurisdictions. In the normal course of business, the Company is subject to examination by various taxing authorities, including the IRS in the U.S. and the taxing authorities in other major jurisdictions including China, Germany, Singapore, Sweden and Switzerland. With a few exceptions, tax years remaining open to examination in significant foreign jurisdictions include tax years 2016 and forward and for the U.S. include tax years 2016 and forward. The Company is undergoing a tax audit by the IRS for the 2016, 2017 and 2018 tax year. The Company is under German tax audits for the FOBOHA business group in 2017 through 2018 and the Seeger business group for the years 2015 through 2017. Pursuant to the sale and purchase agreement, the Company agreed to certain indemnifications for taxes assessed for audit periods related to the Seeger business. Refer to Note 2.

15. Common Stock

There were no shares of common stock issued from treasury in 2021, 2020 or 2019.

In 2021, 2020 and 2019, the Company acquired 100,000 shares, 396,000 shares and 900,000 shares, respectively, of the Company's common stock at a cost of $5,229, $15,550 and $50,347, respectively. These amounts exclude shares reacquired to pay for the related income tax upon issuance of shares in accordance with the terms of the Company's stockholder-approved equity compensation plans and the equity rights granted under those plans ("Reacquired Shares"). These Reacquired Shares were placed in treasury.

In 2021, 2020 and 2019, 172,261 shares, 298,565 shares and 505,623 shares of common stock, respectively, were issued from authorized shares for the exercise of stock options, various other incentive awards and purchases by the Company's Employee Stock Purchase Plan.

16. Preferred Stock

At December 31, 2021 and 2020, the Company had 3,000,000 shares of preferred stock authorized, none of which were outstanding.

17. Stock Plans

Most U.S. salaried and non-union hourly employees are eligible to participate in the Company's 401(k) plan (the "Retirement Savings Plan"). The Retirement Savings Plan provides for the investment of employer and employee contributions in various investment alternatives including the Company's common stock, at the employee's direction. The Company contributes an amount equal to 50% of employee contributions up to 6% of eligible compensation. The Company expenses all contributions made to the Retirement Savings Plan. Effective January 1, 2013, the Retirement Savings Plan was amended to provide certain salaried employees hired on or after January 1, 2013 with an additional annual retirement contribution of 4% of eligible earnings. The Company recognized expense of $3,970, $3,679 and $4,149 in 2021, 2020 and 2019, respectively. As of December 31, 2021, the Retirement Savings Plan held 713,442 shares of the Company's common stock.

The Company has an Employee Stock Purchase Plan ("ESPP") under which eligible employees may elect to have up to the lesser of $25 or 10% of base compensation deducted from their payroll checks for the purchase of the Company's common stock at 95% of the average market value on the date of purchase. The maximum number of shares which may be purchased under the ESPP is 4,550,000. The number of shares purchased under the ESPP was 7,667, 10,041 and 8,834 in 2021, 2020 and 2019, respectively. The Company received cash proceeds from the purchase of these shares of $344, $393 and $463 in 2021, 2020 and 2019, respectively. As of December 31, 2021, 243,121 additional shares may be purchased.

The 2014 Barnes Group Stock and Incentive Award Plan (the "2014 Plan") was approved on May 9, 2014 by the Company's stockholders. The 2014 Plan permits the issuance of incentive awards, stock option grants and stock appreciation rights to eligible participants to purchase up to 6,913,978 shares of common stock. The amount includes shares available for purchase under earlier stock and incentive plans which were merged into the 2014 Plan. The 2014 Plan allows for stock options and stock appreciation rights to be issued at a ratio of 1:1 and other types of incentive awards at a ratio of 2.84:1 from the shares available for future grants. As of December 31, 2021, there were 2,488,316 shares available for future grants under the 2014 Plan, inclusive of Shares Reacquired and shares made available through 2021 forfeitures. As of December 31, 2021, there were 1,218,470 shares of common stock outstanding to be issued upon the exercise of stock options and the vesting of Rights.

Rights under the 2014 Plan entitle the holder to receive, without payment, one share of the Company's common stock after the expiration of the vesting period. Certain of these Rights are also subject to the satisfaction of established performance goals. Additionally, holders of certain Rights are credited with dividend equivalents, which are converted into additional Rights, and holders of certain restricted stock units are paid dividend equivalents in cash when dividends are paid to other stockholders. All Rights have a vesting period of up to five years.

Under the Non-Employee Director Deferred Stock Plan, as amended, each non-employee director who joined the Board of Directors prior to December 15, 2005 was granted the right to receive 12,000 shares of the Company's common stock upon retirement. In 2021, 2020 and 2019, $19, $21 and $22, respectively, of dividend equivalents were paid in cash related to these shares. There was no compensation cost related to this plan in 2021, 2020 or 2019. There are 28,800 shares reserved for issuance under this plan.

Total maximum shares reserved for issuance under all stock plans aggregated 3,978,707 at December 31, 2021.

18. Weighted Average Shares Outstanding

Net income per common share is computed in accordance with accounting standards related to earnings per share. Basic earnings per share is calculated using the weighted-average number of common shares outstanding during the year. Share-based payment awards that entitle their holders to receive nonforfeitable dividends before vesting should be considered participating securities and, as such, should be included in the calculation of basic earnings per share. The Company's restricted stock unit awards which contain nonforfeitable rights to dividends are considered participating securities. Diluted earnings per share reflects the assumed exercise and conversion of all dilutive securities. Shares held by the Retirement Savings Plan are considered outstanding for both basic and diluted earnings per share. There are no adjustments to net income for purposes of computing income available to common stockholders for the years ended December 31, 2021, 2020 or 2019. A reconciliation of

the weighted-average number of common shares outstanding used in the calculation of basic and diluted earnings per share follows:

	Weighted-Average Common Shares Outstanding		
	2021	**2020**	**2019**
Basic	**50,926,374**	50,880,846	51,213,518
Dilutive effect of:			
Stock options	**74,798**	66,738	176,984
Performance share awards	**77,891**	150,002	242,667
Diluted	**51,079,063**	51,097,586	51,633,169

The calculation of weighted-average diluted shares outstanding excludes all anti-dilutive shares. During 2021, 2020 and 2019 the Company excluded 533,177, 484,835 and 280,254 stock awards, respectively, from the calculation of diluted weighted-average shares outstanding as the stock awards were considered anti-dilutive.

19. Leases

The Company maintains leases of certain manufacturing, distribution and assembly facilities, office space, land, machinery and equipment. Leases generally have remaining terms of one year to five years. Leases with an initial term of twelve months or less are not recorded on the Consolidated Balance Sheets. The Company recognizes lease expense for minimum lease payments on a straight line basis over the term of the lease. Certain leases include options to renew or terminate. Renewal options are exercisable per the discretion of the Company and vary based on the nature of each lease, with renewal periods generally ranging from one year to five years. The term of the lease includes renewal periods only if the Company is reasonably certain that it will exercise the renewal option. When determining if a renewal option is reasonably certain of being exercised, the Company considers several factors, including but not limited to, the cost of moving to another location, the cost of disruption to operations, whether the purpose or location of the leased asset is unique and the contractual terms associated with extending the lease.

Certain leases provide the option to purchase the leased property and are therefore evaluated for finance lease consideration. Right-of-use ("ROU") assets and lease liabilities related to finance leases were not material as of December 31, 2021 and 2020. ROU assets arising from finance leases are included in property, plant and equipment, net, and the corresponding liabilities are included in Long Term Debt - Current and Long-Term Debt on the Consolidated Balance Sheet. The depreciable life of leased assets are limited by the expected term of the lease, unless there is a transfer of title or purchase option and the Company believes it is reasonably certain of exercise.

Lease agreements generally do not contain any material residual value guarantees or materially restrictive covenants and the Company does not sublease to any third parties. The Company does not have any material leases that have been signed but not commenced.

Contracts are evaluated at inception to determine whether they contain a lease, where the Company obtains the right to control an identified asset. The following table sets forth the classification of ROU assets and lease liabilities on the Consolidated Balance Sheets:

Operating Leases	**Classification**	**December 31, 2021**	**December 31, 2020**
Leased Assets			
ROU assets	Other assets	$ 29,393	$ 27,539
Lease Liabilities			
Current lease liability	Accrued liabilities	11,125	11,707
Long-term lease liability	Other liabilities	18,018	16,304
		$ 29,143	$ 28,011

Operating lease ROU assets and operating lease liabilities are recognized based on the present value of the future minimum lease payments over the lease term at commencement date. New operating lease ROU assets represent the lease liability, plus any lease payments made at or before the commencement date, less any lease incentives received. The Company's real estate leases, which are comprised primarily of manufacturing, distribution and assembly facilities, represent a majority of the lease liability. A significant portion of lease payments are fixed, although an immaterial portion of payments are variable in nature. Variable lease payments vary based on changes in facts and circumstances related to the use of the ROU and are recorded as incurred. The Company utilizes its incremental borrowing rate by lease term to calculate the present value of our future lease payments if an implicit rate is not specified. The discount rate is risk adjusted on a secured basis and is the rate at which the Company would be charged to borrow the amount equal to the lease payments over a similar term.

The Company has lease agreements with lease and non-lease components, which are accounted for as a single lease component. The Company applies a portfolio approach to effectively account for the operating lease ROU assets and liabilities.

Operating lease costs for the twelve months ended December 31, 2021, 2020 and 2019 were $17,687, $17,379 and $17,838, respectively, and were included within Cost of Sales and Selling and Administrative expenses. Operating lease costs include short-term and variable leases costs, which were not material during the period.

Future minimum lease payments under non-cancellable leases as of December 31, 2021 were as follows:

	Operating Leases
2022	$ 11,696
2023	7,842
2024	4,262
2025	1,981
2026	791
After 2026	6,497
Total lease payments	$ 33,069
Less: Interest	3,926
Present value of lease payments	$ 29,143

	December 31,		
Lease Term and Discount Rate	**2021**	**2020**	**2019**
Weighted-average remaining lease term (years)			
Operating leases	5.8	5.8	6.0
Weighted-average discount rates			
Operating leases	3.01 %	3.52 %	3.90 %

	Year Ended December 31,		
Other Information	**2021**	**2020**	**2019**
Cash paid for amounts included in the measurement of lease liabilities			
Operating cash flows from operating leases	$ 14,586	$ 13,907	$ 13,546
Leased assets obtained in exchange for new operating lease liabilities	$ 15,287	$ 8,012	$ 11,823

20. Changes in Accumulated Other Comprehensive Income by Component

The following tables set forth the changes in accumulated other comprehensive income by component for the years ended December 31, 2021 and December 31, 2020:

	Gains and Losses on Cash Flow Hedges	Pension and Other Postretirement Benefit Items	Foreign Currency Items	Total
January 1, 2021	**$ (757)**	**$ (142,119)**	**$ 20,561**	**$ (122,315)**
Other comprehensive income (loss) before reclassifications to consolidated statements of income	**73**	**17,025**	**(60,252)**	**(43,154)**
Amounts reclassified from accumulated other comprehensive income to the consolidated statements of income	**844**	**12,787**	**—**	**13,631**
Net current-period other comprehensive income (loss)	**917**	**29,812**	**(60,252)**	**(29,523)**
December 31, 2021	**$ 160**	**$ (112,307)**	**$ (39,691)**	**$ (151,838)**

	Gains and Losses on Cash Flow Hedges	Pension and Other Postretirement Benefit Items	Foreign Currency Items	Total
January 1, 2020	$ (115)	$ (144,047)	$ (66,333)	$ (210,495)
Other comprehensive (loss) income before reclassifications to consolidated statements of income	(1,674)	(9,673)	86,894	75,547
Amounts reclassified from accumulated other comprehensive income to the consolidated statements of income	1,032	11,601	—	12,633
Net current-period other comprehensive (loss) income	(642)	1,928	86,894	88,180
December 31, 2020	$ (757)	$ (142,119)	$ 20,561	$ (122,315)

The following table sets forth the reclassifications out of accumulated other comprehensive income by component for the years ended December 31, 2021 and December 31, 2020:

Details about Accumulated Other Comprehensive Income Components	Amount Reclassified from Accumulated Other Comprehensive Income		Affected Line Item in the Consolidated Statements of Income
	2021	**2020**	
Gains and losses on cash flow hedges			
Interest rate contracts	**$ (1,846)**	$ (1,321)	Interest expense
Foreign exchange contracts	**716**	(11)	Net sales
	(1,130)	(1,332)	Total before tax
	286	300	Tax benefit
	(844)	(1,032)	Net of tax
Pension and other postretirement benefit items			
Amortization of prior-service costs	**$ (361)**	$ (386)	(A)
Amortization of actuarial losses	**(16,264)**	(13,661)	(A)
Curtailment gain (loss)	**133**	(484)	(A)
Settlement loss	**(205)**	(549)	(A)
	(16,697)	(15,080)	Total before tax
	3,910	3,479	Tax benefit
	(12,787)	(11,601)	Net of tax
Total reclassifications in the period	**$ (13,631)**	$ (12,633)	

(A) These accumulated other comprehensive income components are included within the computation of net periodic Pension and Other Postretirement Benefits cost. See Note 12.

21. Information on Business Segments

The Company is organized based upon the nature of its products and services and reports under two global business segments: Industrial and Aerospace. Segment information is consistent with how management reviews the businesses, makes investing and resource allocation decisions and assesses operating performance. The Company has not aggregated operating segments for purposes of identifying these two reportable segments.

Industrial is a global provider of highly-engineered, high-quality precision components, products and systems for critical applications serving a diverse customer base in end-markets such as mobility, industrial equipment, automation, personal care, packaging, electronics, and medical devices. Focused on innovative custom solutions, Industrial participates in the design phase of components and assemblies whereby customers receive the benefits of application and systems engineering, new product development, testing and evaluation, and the manufacturing of final products. Products are sold primarily through its direct sales force and global distribution channels. Industrial's Molding Solutions business designs and manufactures customized hot runner systems, advanced mold cavity sensors and process control systems, and precision high cavitation mold assemblies - collectively, the enabling technologies for many complex injection molding applications. The Force & Motion Control business provides innovative cost effective force and motion control solutions for a wide range of sheet metal forming and other industrial markets. The Automation business designs and develops robotic grippers, advanced end-of-arm tooling systems, sensors and other automation components for intelligent robotic handling solutions and industrial automation applications. Industrial's Engineered Components business manufactures and supplies precision mechanical products used in mobility and industrial applications, including mechanical springs, and high-precision punched and fine-blanked components.

Industrial competes with a broad base of large and small companies engaged in the manufacture and sale of engineered products, precision molds, hot runner systems, robotic handling solutions and precision components. Industrial competes on the basis of quality, service, reliability of supply, engineering and technical capability, geographic reach, product breadth, innovation, design, timeliness and price. Industrial has a global presence in multiple countries, with manufacturing, distribution

and assembly operations in the United States, China, Germany, Italy, Sweden and Switzerland, among others. Industrial also has sales and service operations in the United States, China/Hong Kong, Germany, Italy and Switzerland, among others.

Aerospace is a global manufacturer of complex fabricated and precision machined components and assemblies for turbine engines, nacelles and structures for both commercial and defense-related aircraft. The Aerospace Aftermarket business provides aircraft engine component MRO services, including services performed under our Component Repair Programs (“CRPs”), for many of the world’s major turbine engine manufacturers, commercial airlines and the defense market. The Aerospace aftermarket activities also include the manufacture and delivery of aerospace aftermarket spare parts, including revenue sharing programs (“RSPs”) under which the Company receives an exclusive right to supply designated aftermarket parts over the life of specific aircraft engine programs.

Aerospace’s OEM business offers a comprehensive range of in-house manufacturing solutions and capabilities, including components and assemblies. The applications for these components primarily include engines, airframes and nacelles. Aerospace OEM competes with a large number of fabrication and machining companies. Our competitive advantage is based mainly on value derived from quality, concurrent engineering and technical capability, product breadth, solutions-providing new product introduction, timeliness, service, price and intellectual property. Aerospace’s fabrication and machining operations, with facilities in Arizona, Connecticut, Michigan, Ohio, Utah and Singapore, produce critical engine, nacelle and airframe components through technologically advanced manufacturing processes.

The Aerospace Aftermarket business supplements jet engine OEMs’ maintenance, repair and overhaul capabilities, and competes with the service centers of major commercial airlines and other independent service companies for the repair and overhaul of turbine engine components. The manufacture and supply of aerospace aftermarket spare parts, including those related to the RSPs, are dependent upon the reliable and timely delivery of high-quality components. Aerospace’s Aftermarket facilities, located in Connecticut, Ohio and Singapore, specialize in the repair and refurbishment of highly engineered components and assemblies such as cases, rotating life limited parts, rotating air seals, turbine shrouds, vanes and honeycomb air seals. Aerospace Aftermarket's facility in Malaysia is focused on the supply of spare parts.

The Company evaluates the performance of its reportable segments based on the operating profit of the respective businesses, which includes net sales, cost of sales, selling and administrative expenses and certain components of other expense (income), net, as well as the allocation of corporate overhead expenses.

Sales between the business segments and between the geographic areas in which the businesses operate are accounted for on the same basis as sales to unaffiliated customers. Additionally, revenues are attributed to countries based on the location of facilities.

The following table (in millions) sets forth summarized financial information by reportable business segment:

		Industrial	Aerospace	Other	Total Company
Sales					
	2021	**$ 896.5**	**$ 362.4**	**$ —**	**$ 1,258.8**
	2020	770.1	354.3	—	1,124.4
	2019	938.5	552.6	—	1,491.1
Operating profit					
	2021	**$ 97.7**	**$ 52.3**	**$ —**	**$ 150.0**
	2020	66.6	56.8	—	123.4
	2019	114.0	122.5	—	236.4
Assets					
	2021	**$ 1,827.9**	**$ 583.0**	**$ 165.9**	**$ 2,576.8**
	2020	1,908.4	623.5	144.3	2,676.2
	2019	1,879.3	704.3	154.8	2,738.3
Depreciation and amortization					
	2021	**$ 57.5**	**$ 32.8**	**$ 0.9**	**$ 91.1**
	2020	57.7	29.0	0.9	87.7
	2019	62.4	35.9	0.8	99.1
Capital expenditures					
	2021	**$ 21.3**	**$ 12.7**	**$ 0.2**	**$ 34.1**
	2020	19.4	20.8	0.5	40.7
	2019	25.3	26.0	2.0	53.3

Notes:
One customer, General Electric, accounted for 16%, 17% and 21% of the Company's total revenues in 2021, 2020 and 2019, respectively.
"Other" assets include corporate-controlled assets, the majority of which are cash and cash equivalents and deferred tax assets.

A reconciliation of the total reportable segments' operating profit to income before income taxes follows (in millions):

	2021	2020	2019
Operating profit	**$ 150.0**	$ 123.4	$ 236.4
Interest expense	**16.2**	15.9	20.6
Other expense (income), net	**6.0**	5.9	9.0
Income before income taxes	**$ 127.8**	$ 101.5	$ 206.8

The following table (in millions) summarizes total net sales and long-lived assets of the Company by geographic area:

	Domestic	International	Other	Total Company
Sales				
2021	**$ 516.4**	**$ 829.4**	**$ (87.0)**	**$ 1,258.8**
2020	483.8	714.0	(73.4)	1,124.4
2019	630.0	949.4	(88.4)	1,491.1
Long-lived assets				
2021	**$ 380.7**	**$ 1,493.9**	**$ —**	**$ 1,874.6**
2020	383.2	1,628.6	—	2,011.8
2019	372.2	1,580.5	—	1,952.7

Notes: Germany, with sales of $243.1 million, $223.3 million and $302.0 million in 2021, 2020 and 2019, respectively, and Singapore, with sales of $136.8 million, $129.8 million and $225.7 million in 2021, 2020 and 2019, respectively, represent the only international countries with revenues in excess of 10% of the Company's total revenues in those years. "Other" revenues represent the elimination of inter-company sales between geographic locations, of which approximately 78%, 67% and 68% were sales from international locations to domestic locations in 2021, 2020 and 2019, respectively.

Germany, with long-lived assets of $428.9 million, $481.5 million and $480.3 million as of December 31, 2021, 2020 and 2019, respectively, Singapore, with long-lived assets of $201.6 million, $214.8 million and $226.5 million as of December 31, 2021, 2020 and 2019, respectively and Italy, with long-lived assets of $398.2 million, $443.1 million and $402.1 million as of December 31, 2021, 2020 and 2019, respectively, represent the international countries with long-lived assets that exceeded 10% of the Company's total long-lived assets in those years.

22. Commitments and Contingencies

Product Warranties

The Company provides product warranties in connection with the sale of certain products. From time to time, the Company is subject to customer claims with respect to product warranties. The Company accrues its estimated exposure for warranty claims at the time of sale based upon the length of the warranty period, historical experience and other related information known to the Company. Liabilities related to product warranties and extended warranties were not material as of December 31, 2021 or 2020.

In July 2021, a customer asserted breach of contract and contractual warranty claims regarding a part manufactured by the Company. While the Company disputes the asserted claims, the Company and the customer are in discussions seeking to resolve the matter. No litigation or other proceeding has been initiated. While it is currently not possible to determine the ultimate outcome of this matter, the Company intends to vigorously defend its position and believes that the ultimate resolution will not have a material adverse effect on the Company's consolidated financial position or liquidity, but could be material to the consolidated results of operations of any one period.

Litigation

The Company is subject to litigation from time to time in the ordinary course of business and various other suits, proceedings and claims are pending involving the Company and its subsidiaries. The Company records a loss contingency liability when a loss is considered probable and the amount can be reasonably estimated. While it is not possible to determine the ultimate disposition of each of these proceedings and whether they will be resolved consistent with the Company's beliefs, the Company expects that the outcome of such proceedings, individually or in the aggregate, will not have a material adverse effect on financial condition or results of operations.

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders of Barnes Group Inc.

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of Barnes Group Inc. and its subsidiaries (the "Company") as of December 31, 2021 and 2020, and the related consolidated statements of income, of comprehensive income, of changes in stockholders' equity and of cash flows for each of the three years in the period ended December 31, 2021, including the related notes and schedule of valuation and qualifying accounts for each of the three years in the period ended December 31, 2021, appearing under Item 15(c) (collectively referred to as the "consolidated financial statements"). We also have audited the Company's internal control over financial reporting as of December 31, 2021, based on criteria established in Internal Control - Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2021 and 2020, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2021 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2021, based on criteria established in Internal Control - Integrated Framework (2013) issued by the COSO.

Basis for Opinions

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

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

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

Definition and Limitations of Internal Control over Financial Reporting

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

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

Critical Audit Matters

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

Quantitative Goodwill Impairment Assessment

As described in Notes 1 and 6 to the consolidated financial statements, the Company's consolidated goodwill balance was $955 million as of December 31, 2021. Goodwill is subject to impairment testing on an annual basis, in the second quarter, or more frequently if an event or change in circumstances indicates that the fair value of a reporting unit has been reduced below its carrying value. As disclosed by management, the option to first assess qualitative factors to determine whether it is necessary to perform the Step 1 quantitative goodwill impairment test is utilized. If management determines that the Step 1 quantitative impairment test is required, management estimates the fair value of the reporting unit primarily using the income approach, which reflects management's cash flow projections. Inherent in management's development of cash flow projections are assumptions and estimates, including those related to future earnings, growth rates, and the weighted average cost of capital.

The principal considerations for our determination that performing procedures relating to the quantitative goodwill impairment assessment is a critical audit matter are (i) the significant judgment by management when developing the fair value measurement of any reporting units where a quantitative test was performed, (ii) a high degree of auditor judgment, subjectivity, and effort in performing procedures and evaluating management's significant assumptions related to future earnings, growth rates, and the weighted average cost of capital, and (iii) the audit effort involved the use of professionals with specialized skill and knowledge.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to management's quantitative goodwill impairment assessment, including controls over the valuation of any reporting units for which a quantitative test was performed. These procedures also included, among others, testing management's process for developing the fair value estimates; evaluating the appropriateness of the income approach; testing the completeness and accuracy of underlying data used in the estimates; and evaluating the significant assumptions used by management, related to future earnings, growth rates, and the weighted average cost of capital. Evaluating management's assumptions related to future earnings and growth rates involved evaluating whether the assumptions used by management were reasonable considering (i) the current and past performance of the reporting units, (ii) the consistency with external market and industry data, and (iii) whether these assumptions were consistent with evidence obtained in other areas of the audit. Professionals with specialized skill and knowledge were used to assist in the evaluation of the Company's income approach and reasonableness of the weighted average cost of capital.

/s/ PricewaterhouseCoopers LLP
Hartford, Connecticut
February 22, 2022

We have served as the Company's auditor since 1994.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

None.

Item 9A. Controls and Procedures

Disclosure Controls and Procedures

Management, including the Company's President and Chief Executive Officer and Chief Financial Officer, has evaluated the effectiveness of the design and operation of the Company's disclosure controls and procedures as of the end of the period covered by this report. Based upon, and as of the date of, that evaluation, the President and Chief Executive Officer and Chief Financial Officer concluded that the disclosure controls and procedures were effective, in all material respects, and designed to provide reasonable assurance that the information required to be disclosed in the reports the Company files and submits under the Securities Exchange Act of 1934 (the "Exchange Act"), as amended, is (i) recorded, processed, summarized and reported as and when required and (ii) is accumulated and communicated to the Company's management, including our President and Chief Executive Officer and Chief Financial Officer, as appropriate to allow timely decisions regarding required disclosure.

Management's Report on Internal Control Over Financial Reporting

Management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Exchange Act Rule 13a-15(f). Under the supervision and with the participation of management, including the President and Chief Executive Officer and Chief Financial Officer, the Company conducted an assessment of the effectiveness of its internal control over financial reporting based on the framework in the "Internal Control - Integrated Framework 2013" issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on the assessment under this framework, management concluded that the Company's internal control over financial reporting was effective, in all material respects, as of December 31, 2021.

PricewaterhouseCoopers LLP, the independent registered public accounting firm that audited the financial statements included in this Annual Report, has issued an attestation report on the Company's internal control over financial reporting as of December 31, 2021, which appears within Item 8 of this Annual Report on Form 10-K.

Changes in Internal Control Over Financial Reporting

There has been no change to our internal control over financial reporting during the Company's fourth fiscal quarter that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. Other Information

None.

Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections

Not Applicable.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

Information with respect to our directors, corporate governance and other information required by this Item 10 may be found in the “Governance” and “Stock Ownership” sections of our definitive proxy statement to be delivered to stockholders in connection with the Annual Meeting of Stockholders to be held on May 6, 2022 (the “Proxy Statement”). Such information is incorporated herein by reference.

EXECUTIVE OFFICERS

The Company’s executive officers as of the date of this Annual Report are as follows:

Name	Position	Age as of December 31, 2021
Patrick J. Dempsey	President and Chief Executive Officer	57
Michael A. Beck	Senior Vice President, Barnes Group Inc., and President, Barnes Aerospace	61
Dawn N. Edwards	Senior Vice President, Human Resources	53
Lukas Hovorka	Senior Vice President, Corporate Development	49
Patrick T. Hurley	Senior Vice President & Chief Technology Officer	49
Stephen G. Moule	Senior Vice President, Barnes Group Inc., and President, Barnes Industrial	49
James C. Pelletier	Senior Vice President, General Counsel and Secretary	44
Julie K. Streich	Senior Vice President, Finance and Chief Financial Officer	51

Each officer holds office until his or her successor is appointed and qualified or otherwise as provided in the Company’s Amended and Restated By-Laws. No family relationships exist among the executive officers of the Company. Except for Messrs. Hurley and Moule and Ms. Streich, each of the Company’s executive officers has been employed by the Company or its subsidiaries in an executive or managerial capacity for at least the past five years. There are no arrangements or understandings with any other person under which any executive officer was selected as an officer.

Mr. Dempsey was appointed President and Chief Executive Officer effective March 1, 2013. From February 2012 until such appointment, he served as Senior Vice President and Chief Operating Officer. From October 2008 until February 2012, he served as Vice President, Barnes Group Inc. and President, Logistics and Manufacturing Services. Prior to that, he held a series of roles of increasing responsibility since joining the Company in October 2000. In October 2007, he was appointed Vice President, Barnes Group Inc. and President, Barnes Distribution. In November 2004, he was promoted to Vice President, Barnes Group Inc. and President, Barnes Aerospace. Mr. Dempsey is currently a director of Nucor Corporation, having been appointed as of December 1, 2016.

Mr. Beck was appointed Senior Vice President, Barnes Group Inc. and President, Barnes Aerospace effective March 1, 2016. Mr. Beck came to Barnes Group with over 27 years of global aerospace experience. Prior to joining Barnes Group, Mr. Beck was the Senior Vice President & General Manager, Fuel and Motion Control, a $1B division of Eaton’s Aerospace Group. Prior to this, he was the Chief Executive Officer of GKN’s Aerospace Engine Systems business, where he led the due diligence, business synergies and integration of a significant acquisition. Prior to that, he was the President and Chief Executive Officer of GKN’s global Propulsion Systems and Special Products business. Earlier in his career, Mr. Beck was the Chief Operating Officer and Site Executive for GKN’s St. Louis, Missouri business. As previously disclosed on November 5, 2021, Mr. Beck notified the Company that he has decided to retire, effective April 30, 2022, following an orderly transition period.

Ms. Edwards was appointed Senior Vice President, Human Resources effective August 2009. From December 2008 until August 2009, she served as Vice President of Human Resources - Global Operations. From September 1998 until December

2008, Ms. Edwards served as Group Director, Human Resources for Barnes Aerospace, Associated Spring and Barnes Industrial. Ms. Edwards joined the Company in September 1998.

Mr. Hovorka was appointed Senior Vice President, Corporate Development effective March 1, 2021. He joined the Company in 2008 as Director, Corporate Development, and served as the Company's Vice President, Corporate Development prior to his current appointment. Prior to joining the Company, Mr. Hovorka held the position of Director/Vice President, Corporate Development with ITOCHU International Inc. and, before that, held roles with both Robertson Stephens and Goldman Sachs.

Mr. Hurley was appointed Senior Vice President & Chief Technology Officer effective February 7, 2019. From 2014 until joining the Company, Mr. Hurley was General Manager, Asia Pacific & Chief R&D Officer with A123 Systems, LLC. From 2011 to 2014, he held a series of roles with increasing responsibility with Johnson Controls, including Director, Global Core Components; Director, R&D; and Senior Manager, Strategic Technology Planning. From 2006 to 2011, Mr. Hurley held roles with Air Products, including the positions of Senior Principal Research Scientist / Technology Lead and Senior Research Scientist.

Mr. Moule was appointed Senior Vice President, Barnes Group Inc. and President, Barnes Industrial effective December 1, 2019. Before joining the Company, Mr. Moule was President, Americas at Gilbarco Veeder-Root (GVR), a $1.1B operating unit within the Fortive Corporation. Mr. Moule joined GVR in 2007 and held various positions of increasing responsibility including President, North America, as well as Managing Director, United Kingdom; Managing Director, Europe; President Europe & CIS; and President, Europe, Middle East & Africa, all based in London, England.

Mr. Pelletier was appointed Senior Vice President, General Counsel and Secretary effective April 1, 2020. He joined the Company in April 2015, and served as Deputy General Counsel of the Company and Segment General Counsel, Barnes Aerospace. Prior to joining the Company, Mr. Pelletier held the position of Associate Counsel with Pratt & Whitney, a United Technologies Company from 2009.

Ms. Streich was appointed Senior Vice President, Finance and Chief Financial Officer effective May 3, 2021. Prior to joining the Company, Ms. Streich served in various roles at Centrica PLC from 2012 through 2020. Ms. Streich served as Centrica PLC’s Senior Vice President, Head of Finance Operations from 2019 to 2020, as Vice President, Group Head of Global Planning and Analytics from 2017 to 2019, and as Chief Financial Officer of its Direct Energy Home business from 2016 to 2017. Prior to joining Centrica in 2012, Ms. Streich held finance positions of increasing responsibility with Pentair Process Technologies, Irwin Financial Corporation, Eagle Materials, MeadWestvaco, and Menasha Corporation.

Items 11-14.

The information called for by Items 11-14 is incorporated by reference to the "Governance," "Stock Ownership," "Executive Compensation," "Director Compensation in 2021," "Securities Authorized for Issuance Under Equity Compensation Plans," "Related Person Transactions," and "Principal Accountant Fees and Services" sections in our Proxy Statement.

PART IV

Item 15. Exhibits, Financial Statement Schedule

(a)(1) The following Financial Statements and Supplementary Data of the Company are set forth herein under Item 8 of this Annual Report:

Consolidated Statements of Income for the years ended December 31, 2021, 2020 and 2019

Consolidated Balance Sheets as of December 31, 2021 and 2020

Consolidated Statements of Comprehensive Income for the years ended December 31, 2021, 2020 and 2019

Consolidated Statements of Cash Flows for the years ended December 31, 2021, 2020 and 2019

Consolidated Statements of Changes in Stockholders' Equity for the years ended December 31, 2021, 2020 and 2019

Notes to Consolidated Financial Statements

Report of Independent Registered Public Accounting Firm (PCAOB ID No. 238)

(a)(2) See Financial Statement Schedule under Item 15(c).

(a)(3) See Item 15(b) below.

(b) The Exhibits required by Item 601 of Regulation S-K are filed within the Exhibit Index of this Annual Report, which is incorporated herein by reference.

(c) Financial Statement Schedule.

Item 16. Form 10-K Summary

None

Schedule II—Valuation and Qualifying Accounts
Years Ended December 31, 2021, 2020 and 2019
(In thousands)

Allowances for Credit Losses:		
Balance January 1, 2019	$	5,010
Provision charged to income		1,347
Doubtful accounts written off		(960)
Reclassified to assets held for sale (see Note 2)		(152)
Other adjustments[1]		(48)
Balance December 31, 2019		**5,197**
Provision charged to income		1,200
Doubtful accounts written off		(417)
Other adjustments[1]		368
Balance December 31, 2020		**6,348**
Provision charged to income		**(11)**
Doubtful accounts written off		**(562)**
Other adjustments[1]		**(150)**
Balance December 31, 2021	**$**	**5,625**

(1) These amounts are comprised primarily of foreign currency translation and other reclassifications.

Schedule II—Valuation and Qualifying Accounts
Years Ended December 31, 2021, 2020 and 2019
(In thousands)

Valuation Allowance on Deferred Tax Assets:	
Balance January 1, 2019	$ 4,366
Additions charged to income tax expense	953
Reductions charged to other comprehensive income	(7)
Reductions credited to income tax expense	(1,683)
Changes due to foreign currency translation	(37)
Balance December 31, 2019	3,592
Additions charged to income tax expense	743
Reductions charged to other comprehensive income	24
Reductions credited to income tax expense	(600)
Changes due to foreign currency translation	(2)
Balance December 31, 2020	**3,757**
Additions charged to income tax expense	**346**
Reductions charged to other comprehensive income	**(15)**
Reductions credited to income tax expense	**(241)**
Changes due to foreign currency translation	**22**
Balance December 31, 2021	**$ 3,869**

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the Company has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

Date: February 22, 2022

BARNES GROUP INC.

By /S/ PATRICK J. DEMPSEY

Patrick J. Dempsey
President and Chief Executive Officer

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below as of the above date by the following persons on behalf of the Company in the capacities indicated.

/S/ PATRICK J. DEMPSEY

Patrick J. Dempsey
President and Chief Executive Officer
(Principal Executive Officer), and Director

/S/ JULIE K. STREICH

Julie K. Streich
Senior Vice President, Finance
Chief Financial Officer
(Principal Financial Officer)

/S/ MARIAN ACKER

Marian Acker
Vice President, Controller
(Principal Accounting Officer)

/S/ THOMAS O. BARNES

Thomas O. Barnes
Director

/S/ ELIJAH K. BARNES

Elijah K. Barnes
Director

/S/ JAKKI L. HAUSSLER

Jakki L. Haussler
Director

/S/ RICHARD J. HIPPLE

Richard J. Hipple
Director

/S/ THOMAS J. HOOK

Thomas J. Hook
Director

/S/ DAPHNE E. JONES

Daphne E. Jones
Director

/S/ MYLLE H. MANGUM

Mylle H. Mangum
Director

/S/ HANS-PETER MÄNNER

Hans-Peter Männer
Director

/S/ WILLIAM J. MORGAN

William J. Morgan
Director

/S/ ANTHONY V. NICOLOSI

Anthony V. Nicolosi
Director

/S/ JOANNA L. SOHOVICH

JoAnna L. Sohovich
Director

EXHIBIT INDEX

Barnes Group Inc.

Annual Report on Form 10-K
for the Year ended December 31, 2021

Exhibit No.	Description	Reference
2.1*	Sale and Purchase Agreement, dated as of September 19, 2018, between Barnes GTE S.r.l., the Company and AGIC Gripper (Netherlands) B.V., HDX S.À.R.L., Asia-Germany Industry 4.0 Promotion Cross-Border Fund I L.P., Xenon Private Equity V Limited Partnership and certain other sellers named therein.	Incorporated by reference to Exhibit 2.1 to Form 8-K filed by the Company on September 24, 2018.
3.1	Restated Certificate of Incorporation; Certificate of Designation, Preferences and Rights of Series A Junior Participating Preferred Stock; Certificate of Change of Location of registered office and of registered agent, dated December 13, 2002; Certificate of Merger of domestic limited liability company into a domestic company, dated May 19, 2004; Certificate of Amendment of Restated Certificate of Incorporation, dated April 20, 2006; and Certificate of Amendment of Restated Certificate of Incorporation, dated as of May 3, 2013.	Incorporated by reference to Exhibit 3.1 to the Company's report on Form 10-Q (Commission file number 0001-04801) for the quarter ended June 30, 2013.
3.2	Amended and Restated By-Laws as of July 28, 2016.	Incorporated by reference to Exhibit 3.1 to Form 8-K (Commission file number 0001-04801) filed by the Company on July 29, 2016.
4.1	Description of Securities.	Incorporated by reference to Exhibit 4.1 to the Company's report on Form 10-K for the year ended December 31, 2019.
10.1	(i) Fifth Amended and Restated Senior Unsecured Revolving Credit Agreement, dated September 27, 2011.	Incorporated by reference to Exhibit 4.1 to the Company's report on Form 10-Q (Commission file number 0001-04801) for the quarter ended June 30, 2013.
	(ii) Amendment No. 2 and Joinder to Credit Agreement dated as of September 27, 2013 (amending Fifth Amended and Restated Senior Unsecured Revolving Credit Agreement, dated as of September 27, 2011).	Incorporated by reference to Exhibit 4.1 to the Company's report on Form 10-Q (Commission file number 0001-04801) for the quarter ended September 30, 2013.
	(iii) Amendment No. 3 to Credit Agreement dated as of October 15, 2014.	Incorporated by reference to Exhibit 10.1(iii) to the Company's report on Form 10-K (Commission file number 0001-04801) for the year ended December 31, 2014.
	(iv) Amendment No. 4 to Credit Agreement dated as of February 2, 2017.	Incorporated by reference to Exhibit 10.1 to the Company's report on Form 10-Q for the quarter ended March 31, 2017.
	(v) Amendment No. 5 to Credit Agreement dated as of October 19, 2018.	Incorporated by reference to Exhibit 10.1 to the Company's report on Form 10-Q for the quarter ended September 30, 2018.
	(vi) Amendment No. 6 to Credit Agreement dated as of October 8, 2020.	Incorporated by reference to Exhibit 10.2 to Form 8-K filed by the Company on October 13, 2020.
	(vii) Sixth Amended and Restated Senior Unsecured Revolving Credit Agreement, dated as of February 10, 2021.	Incorporated by reference to Exhibit 10.1 to Form 8-K filed by the Company on February 12, 2021.
	(viii) LIBOR Transition Amendment, dated as of October 11, 2021.	Incorporated by reference to Exhibit 10.1 to the Company's report on Form 10-Q for the quarter ended September 30, 2021.

10.2	(i) Note Purchase Agreement, dated as of October 15, 2014, among the Company and New York Life Insurance Company, New York Life Insurance and Annuity Corporation and New York Life Insurance and Annuity Corporation Institutionally Owned Life Insurance Separate Account (BOLI 30C).	Incorporated by reference to Exhibit 10.1 to Form 8-K (Commission file number 0001-04801) filed by the Company on October 17, 2014.
	(ii) First Amendment to Note Purchase Agreement, dated as of October 8, 2020.	Incorporated by reference to Exhibit 10.1 to Form 8-K filed by the Company on October 13, 2020.
10.3**	(ii) Barnes Group Inc. Management Incentive Compensation Plan, amended December 28, 2018.	Incorporated by reference to Exhibit 10.3(ii) to the Company's report on Form 10-K for the year ended December 31, 2018.
10.4**	(i) Offer Letter between the Company and Patrick Dempsey, dated February 22, 2013.	Incorporated by reference to Exhibit 10.3 to the Company's report on Form 10-Q (Commission file number 0001-04801) for the quarter ended March 31, 2013.
	(ii) Amendment to Offer Letter to Patrick Dempsey, dated January 6, 2015.	Incorporated by reference to Exhibit 10.6(ii) to the Company's report on Form 10-K (Commission file number 0001-04801) for the year ended December 31, 2014.
	(iii) Employee Non-Disclosure, Non-Competition, Non-Solicitation and Non-Disparagement Agreement between the Company and Patrick J. Dempsey, dated February 27, 2013.	Incorporated by reference to Exhibit 10.4 to the Company's report on Form 10-Q (Commission file number 0001-04801) for the quarter ended March 31, 2013.
10.5**	Offer Letter to Julie K. Streich, dated April 20, 2021.	Incorporated by reference to Exhibit 10.1 to Form 8-K filed by the Company on April 30, 2021.
10.6**	Offer Letter to Michael A. Beck, dated January 28, 2016.	Incorporated by reference to Exhibit 10.1 to the Company's report on Form 10-Q (Commission file number 0001-04801) for the quarter ended March 31, 2016.
10.7**	Offer Letter to Lukas Hovorka, dated February 12, 2021.	Incorporated by reference to Exhibit 10.2 to the Company's report on Form 10-Q for the quarter ended March 31, 2021.
10.8**	Offer Letter to Patrick T. Hurley, dated January 4, 2019.	Incorporated by reference to Exhibit 10.39 to the Company's report on Form 10-K for the year ended December 31, 2018.
10.9**	Offer Letter to Stephen Moule, dated October 24, 2019.	Incorporated by reference to Exhibit 10.11 to the Company's report on Form 10-K for the year ended December 31, 2019.
10.10**	Offer Letter to James C. Pelletier, dated February 14, 2020.	Incorporated by reference to Exhibit 10.1 to the Company's report on Form 10-Q for the quarter ended March 31, 2020.
10.11**	(i) Form of Temporary Officer Base Salary Reduction Consent.	Incorporated by reference to Exhibit 10.1 to the Company's report on Form 10-Q for the quarter ended June 30, 2020.
	(ii) Form of Temporary Officer Base Salary Reduction Consent.	Incorporated by reference to Exhibit 10.3 to the Company's report on Form 10-Q for the quarter ended September 30, 2020.
10.12**	(i) Barnes Group Inc. Retirement Benefit Equalization Plan, as amended and restated effective January 1, 2013.	Incorporated by reference to Exhibit 10.9(i) to the Company's report on Form 10-K for the year ended December 31 2017.
	(ii) First Amendment to the Barnes Group Inc. Retirement Benefit Equalization Plan dated December 12, 2014.	Incorporated by reference to Exhibit 10.9(ii) to the Company's report on Form 10-K (Commission file number 0001-04801) for the year ended December 31, 2014.

10.13**	(i) Barnes Group Inc. Supplemental Senior Officer Retirement Plan, as amended and restated effective January 1, 2009.	Incorporated by reference to Exhibit 10.3 to the Company's report on Form 10-K (Commission file number 0001-04801) for the year ended December 31, 2008.
	(ii) Amendment to the Barnes Group Inc. Supplemental Senior Officer Retirement Plan.	Incorporated by reference to Exhibit 10.3(ii) to the Company's report on Form 10-K (Commission file number 0001-04801) for the year ended December 31, 2009.
	(iii) Second Amendment to the Barnes Group Inc. Supplemental Senior Officer Retirement Plan dated December 12, 2014.	Incorporated by reference to Exhibit 10.10(iii) to the Company's report on Form 10-K (Commission file number 0001-04801) for the year ended December 31, 2014.
10.14**	(i) Amended and Restated Supplemental Executive Retirement Plan effective April 1, 2012.	Incorporated by reference to Exhibit 10.11(i) to the Company's report on Form 10-K (Commission file number 0001-04801) for the year ended December 31, 2016.
	(ii) Amendment 2013-1 to the Barnes Group Inc. Supplemental Executive Retirement Plan dated July 23, 2013.	Incorporated by reference to Exhibit 10.3 to the Company's report on Form 10-Q (Commission file number 0001-04801) for the quarter ended June 30, 2013.
	(iii) Amendment 2014-1 to the Barnes Group Inc. Supplemental Executive Retirement Plan dated December 12, 2014.	Incorporated by reference to Exhibit 10.11(iii) to the Company's report on Form 10-K (Commission file number 0001-04801) for the year ended December 31, 2014.
10.15**	Barnes Group Inc. Senior Executive Enhanced Life Insurance Program, as amended and restated effective April 1, 2011.	Incorporated by reference to Exhibit 10.12 to the Company's report on Form 10-K (Commission file number 0001-04801) for the year ended December 31, 2016.
10.16**	Barnes Group Inc. Enhanced Life Insurance Program, as amended and restated effective April 1, 2011.	Incorporated by reference to Exhibit 10.13 to the Company's report on Form 10-K (Commission file number 0001-04801) for the year ended December 31, 2016.
10.17**	Barnes Group Inc. Executive Group Term Life Insurance Program effective April 1, 2011.	Incorporated by reference to Exhibit 10.14 to the Company's report on Form 10-K (Commission file number 0001-04801) for the year ended December 31, 2016.
10.18**	Form of Barnes Group Inc. Executive Officer Severance Agreement, as amended March 31, 2010.	Incorporated by reference to Exhibit 10.15 to the Company's report on Form 10-K (Commission file number 0001-04801) for the year ended December 31, 2016.
10.19**	Form of Barnes Group Inc. Executive Officer Severance Agreement, effective February 19, 2014.	Incorporated by reference to Exhibit 10.1 to the Company's report on Form 10-Q (Commission file number 0001-04801) for the quarter ended March 31, 2014.
10.20**	Barnes Group Inc. Executive Separation Pay Plan, as amended and restated effective January 1, 2012.	Incorporated by reference to Exhibit 10.17 to the Company's report on Form 10-K (Commission file number 0001-04801) for the year ended December 31, 2016.
10.21**	Barnes Group Inc. Executive Separation Pay plan, as amended and restated effective March 7, 2019.	Incorporated by reference to Exhibit 10.2 to the Company's report on Form 10-Q for the quarter ended March 31, 2019.
10.22**	(i) Trust Agreement between the Company and Fidelity Management Trust Company (Barnes Group 2009 Deferred Compensation Plan) dated September 1, 2009.	Incorporated by reference to Exhibit 10.18(i) to the Company's report on Form 10-K (Commission file number 0001-04801) for the year ended December 31, 2016.

	(ii) Amended and Restated Barnes Group 2009 Deferred Compensation Plan effective as of April 1, 2012.	Incorporated by reference to Exhibit 10.18(ii) to the Company's report on Form 10-K (Commission file number 0001-04801) for the year ended December 31, 2016.
	(iii) First Amendment to the Barnes Group 2009 Deferred Compensation Plan dated December 12, 2014.	Incorporated by reference to Exhibit 10.18(iii) to the Company's report on Form 10-K (Commission file number 0001-04801) for the year ended December 31, 2014.
10.23**	Barnes Group Inc. Non-Employee Director Deferred Stock Plan, as amended and restated December 31, 2008.	Incorporated by reference to Exhibit 10.19 to the Company's report on Form 10-K (Commission file number 0001-04801) for the year ended December 31, 2016.
10.24**	Barnes Group Inc. Directors' Deferred Compensation Plan, as amended and restated December 31, 2008.	Incorporated by reference to Exhibit 10.20 to the Company's report on Form 10-K (Commission file number 0001-04801) for the year ended December 31, 2016.
10.25**	Barnes Group Inc. Trust Agreement for Specified Plans.	Incorporated by reference to Exhibit 10.22 to the Company's report on Form 10-K (Commission file number 0001-04801) for the year ended December 31, 2016.
10.26**	Form of Incentive Compensation Reimbursement Agreement between the Company and certain Officers.	Incorporated by reference to Exhibit 10.23 to the Company's report on Form 10-K (Commission file number 0001-04801) for the year ended December 31, 2016.
10.27**	Form of Indemnification Agreement between the Company and its Officers and Directors.	Incorporated by reference to Exhibit 10.24 to the Company's report on Form 10-K (Commission file number 0001-04801) for the year ended December 31, 2016.
10.28**	(i) Barnes Group Inc. Stock and Incentive Award Plan, as amended March 15, 2010.	Incorporated by reference to Exhibit 10.25(ii) to the Company's report on Form 10-K (Commission file number 0001-04801) for the year ended December 31, 2016.
	(ii) Exercise of Authority Relating to the Stock and Incentive Award Plan, dated March 3, 2009.	Incorporated by reference to Exhibit 10.25(iii) to the Company's report on Form 10-K (Commission file number 0001-04801) for the year ended December 31, 2016.
	(iii) Amendment 2010-1 approved on December 9, 2010 to the Barnes Group Inc. Stock and Incentive Award Plan as amended March 15, 2010.	Incorporated by reference to Exhibit 10.25(iv) to the Company's report on Form 10-K (Commission file number 0001-04801) for the year ended December 31, 2016.
10.29**	2014 Barnes Group Inc. Stock and Incentive Award Plan.	Incorporated by reference to Annex A to the Company's definitive proxy statement (Commission file number 0001-04801) filed with the Securities and Exchange Commission on March 25, 2014.
10.30**	Form of Barnes Group Inc. Stock and Incentive Award Plan Restricted Stock Unit Summary of Grant and Restricted Stock Unit Agreement for US Directors dated February 7, 2017 (for non-management directors).	Incorporated by reference to Exhibit 10.30 to the Company's report on Form 10-K for the year ended December 31, 2019.
10.31**	Form of Barnes Group Inc. Stock and Incentive Award Plan Restricted Stock Unit Summary of Grant and Restricted Stock Unit Agreement for non-US Directors dated October 13, 2016 (for non-management directors).	Incorporated by reference to Exhibit 10.25 to the Company's report on Form 10-K for the year ended December 31, 2018.
10.32**	Form of Barnes Group Inc. Stock and Incentive Award Plan Stock Option Summary of Grant and Stock Option Agreement for Employees in Grade 21 and up dated as of February 8, 2011.	Incorporated by reference to Exhibit 10.3 to the Company's report on Form 10-Q (Commission file number 0001-04801) for the quarter ended March 31, 2011.

10.33**	Form of Barnes Group Inc. Stock and Incentive Award Plan Stock Option Summary of Grant and Stock Option Agreement for Employees in Grade 21 and up dated May 9, 2014.	Incorporated by reference to Exhibit 10.4 to the Company's report on Form 10-Q (Commission file number 0001-04801) for the quarter ended June 30, 2014.
10.34**	Form of Barnes Group Inc. Stock and Incentive Award Plan Stock Option Summary of Grant and Stock Option Agreement for Employees in Grade 21 and up dated February 9, 2016.	Incorporated by reference to Exhibit 10.33 to the Company's report on Form 10-K (Commission file number 0001-04801) for the year ended December 31, 2015.
10.35**	Form of Barnes Group Inc. Stock and Incentive Award Plan Restricted Stock Unit Summary of Grant for Employees and Restricted Stock Unit Agreement dated February 9, 2016.	Incorporated by reference to Exhibit 10.32 to the Company's report on Form 10-K for the year ended December 31, 2018.
10.36**	Form of Barnes Group Inc. Stock and Incentive Award Plan Performance Share Award Summary of Grant and Performance Share Award Agreement for Officers and Other Individuals as Designated by the Compensation and Management Development Committee dated as of February 8, 2018.	Incorporated by reference to Exhibit 10.41(ii) to the Company's report on Form 10-K for the year ended December 31, 2017.
10.37**	Form of Barnes Group Inc. Stock and Incentive Award Plan Performance Share Award Summary of Grant and Performance Share Award Agreement for Officers and Other Individuals as Designated by the Compensation and Management Development Committee dated as of February 13, 2019.	Incorporated by reference to Exhibit 10.35 to the Company's report on Form 10-K for the year ended December 31, 2018.
10.38**	Form of Barnes Group Inc. Stock and Incentive Award Plan Performance Share Award Summary of Grant and Performance Share Award Agreement for Officers and Other Individuals as Designated by the Compensation and Management Development Committee dated as of February 13, 2020.	Incorporated by reference to Exhibit 10.2 to the Company's report on Form 10-Q for the quarter ended March 31, 2020.
10.39**	Form of Barnes Group Inc. Stock and Incentive Award Plan Performance Share Award Summary of Grant and Performance Share Award Agreement for Officers and Other Individuals as Designated by the Compensation and Management Development Committee dated as of February 11, 2021.	Incorporated by reference to Exhibit 10.1 to the Company's report on Form 10-Q for the quarter ended March 31, 2021.
10.40**	Performance-Linked Bonus Plan for Selected Executive Officers approved by Shareholders on May 6, 2016.	Incorporated by reference to Exhibit 10.42 to the Company's report on Form 10-K (Commission file number 0001-04801) for the year ended December 31, 2016.
21	List of Subsidiaries.	Filed with this report.
23	Consent of Independent Registered Public Accounting Firm.	Filed with this report.
31.1	Certification pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.	Filed with this report.
31.2	Certification pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.	Filed with this report.
32	Certification pursuant to 18 U.S.C. Section 1350 as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.	Furnished with this report.
101.INS	XBRL Instance Document.	Filed with this report.
101.SCH	XBRL Taxonomy Extension Schema Document.	Filed with this report.
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document.	Filed with this report.

101.DEF	XBRL Taxonomy Extension Definition Linkbase Document.	Filed with this report.
101.LAB	XBRL Taxonomy Extension Label Linkbase Document.	Filed with this report.
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document.	Filed with this report.

* The Company hereby agrees to provide the Commission upon request copies of any omitted exhibits or schedules to this exhibit required by Item 601(b)(2) of Regulation S-K.

** Management contract or compensatory plan or arrangement.

EXHIBIT 21

BARNES GROUP INC.

CONSOLIDATED SUBSIDIARIES

as of December 31, 2021

Name	Jurisdiction
AS Monterrey, S. de R.L. de C.V.	Mexico
Associated Spring (Tianjin) Company, Ltd.	China
Associated Spring (UK) Ltd.	United Kingdom
Associated Spring Asia Pte. Ltd.	Singapore
Associated Spring Corporation	United States - Connecticut
Associated Spring do Brasil Ltda.	Brazil
Associated Spring Mexico, S. de R.L. de C.V.	Mexico
Associated Spring Raymond (Shanghai) Co., Ltd.	China
Associated Spring Raymond GmbH	Germany
Barnes Airmotive Malaysia SND. BHD.	Malaysia
Barnes Financing Delaware LLC	United States - Delaware
Barnes Group (Delaware) LLC	United States - Delaware
Barnes Group (Germany) GmbH	Germany
Barnes Group (Scotland) Limited	Scotland
Barnes Group (Thailand) Ltd.	Thailand
Barnes Group (U.K.) 2 Limited	United Kingdom
Barnes Group (U.K.) Limited	United Kingdom
Barnes Group Acquisition GmbH	Germany
Barnes Group Canada Corp.	Canada
Barnes Group Finance Company (Delaware)	United States - Delaware
Barnes Group Holding LLC	United States - Delaware
Barnes Group Luxembourg (No. 1) S.à r.l.	Luxembourg
Barnes Group Luxembourg (No. 2) S.à r.l.	Luxembourg
Barnes Group Spain, S.R.L.	Spain
Barnes Group Suisse Industries GmbH	Switzerland
Barnes Group Switzerland GmbH	Switzerland
Barnes Industrial Group India Private Limited	India
Barnes Korea Ltd.	Korea
Barnes Molding Solutions (Jiangsu) Co., Ltd.	China
Barnes Molding Solutions Korea Limited	Korea
Blitz F16-34 GmbH	Germany
Curtiss Industries (U.K.) Limited	United Kingdom
FOBOHA (Germany) GmbH	Germany
FOBOHA Holding GmbH	Germany

Name	Jurisdiction
Gammaflux Controls, Inc.	United States - Connecticut
GF Controls GmbH	Germany
Gimatic Automation Engineering (Changshu) Co., Ltd.	China
Gimatic Automation India Pvt Ltd.	India
Gimatic Balkan d.o.o. Beograd – Savski Venac	Serbia
Gimatic Bulgaria Ltd.	Bulgaria
Gimatic Czech Republic s.r.o.	Czech Republic
Gimatic France S.a.r.l.	France
Gimatic Iberia S.L.	Spain
Gimatic Japan Limited	Japan
Gimatic Korea Limited	Korea
Gimatic Nordic A.B.	Sweden
Gimatic Otomasyon Ticaret Anonim Şirketi	Turkey
Gimatic Polska sp. z o.o	Poland
Gimatic S.r.l.	Italy
Gimatic Sisteme RO SRL	Romania
Gimatic South Africa (Pty) Ltd.	South Africa
Gimatic UK Limited	United Kingdom
Gimatic Vertrieb GmbH	Germany
Gimatrade S.r.l.	Italy
Industrial Gas Springs Group Holdings Limited	United Kingdom
Industrial Gas Springs Inc.	United States - Pennsylvania
Industrial Gas Springs Limited	United Kingdom
Manner Hong Kong Limited	Hong Kong
männer Japan Co. Ltd.	Japan
Manner USA, Inc.	United States - Georgia
MTM S.r.l.	Italy
OOO Gimatic Rus	Russia
Otto Männer GmbH	Germany
Otto Männer Immobilien GmbH	Germany
Otto Männer Innovation GmbH	Germany
Priamus System Technologies GmbH	Germany
Priamus System Technologies LLC	United States - Ohio
Raymond Distribution-Mexico, S.A. de C.V.	Mexico
Resortes Argentina S.A.	Argentina
Ressorts SPEC SAS	France
Sign Holdings Limited	United Kingdom
Strömsholmen AB	Sweden
Synventive Acquisition B.V.	Netherlands

Name	Jurisdiction
Synventive Acquisition GmbH	Germany
Synventive Acquisition Inc.	United States - Delaware
Synventive Acquisition UK Ltd.	United Kingdom
Synventive Acquisition Unlimited	United Kingdom
Synventive Fertigungstechnik GmbH	Germany
Synventive Holding B.V.	Netherlands
Synventive Holding Limited	United Kingdom
Synventive Molding Solutions (Suzhou) Co., Ltd.	China
Synventive Molding Solutions B.V.	Netherlands
Synventive Molding Solutions Canada, Inc.	Canada
Synventive Molding Solutions Co., Ltd.	Hong Kong
Synventive Molding Solutions GmbH	Germany
Synventive Molding Solutions JBJ Private Limited	India
Synventive Molding Solutions K.K.	Japan
Synventive Molding Solutions Lda	Portugal
Synventive Molding Solutions Limited	United Kingdom
Synventive Molding Solutions LLC	United States - Delaware
Synventive Molding Solutions LTDA.	Brazil
Synventive Molding Solutions Pte Ltd.	Singapore
Synventive Molding Solutions s.r.o.	Czech Republic
Synventive Molding Solutions SL	Spain
Synventive Molding Solutions, Inc.	United States - Delaware
Synventive Parent Inc.	United States - Delaware
The Wallace Barnes Company	United States - Connecticut
Thermoplay Brasil Sistemas de Injecao Ltda	Brazil
Thermoplay Deutschland GmbH	Germany
Thermoplay France S.a.r.l.	France
Thermoplay India Private Limited	India
Thermoplay S.p.A.	Italy
Thermoplay U.K. Ltd.	United Kingdom
Windsor Airmotive Asia Pte. Ltd.	Singapore

The foregoing does not constitute a complete list of all subsidiaries of the registrant. Any subsidiaries that have been omitted do not, if considered in the aggregate as a single subsidiary, constitute a “Significant Subsidiary” as defined by the Securities and Exchange Commission.

EXHIBIT 23

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Registration Statements on Form S-8 (Nos. 333-205952, 333-196013, 333-150741, and 333-133597) of Barnes Group Inc. of our report dated February 22, 2022 relating to the financial statements, financial statement schedule and the effectiveness of internal control over financial reporting, which appears in this Form 10-K.

/s/ PRICEWATERHOUSECOOPERS LLP

Hartford, Connecticut
February 22, 2022

Board Of Directors

Thomas O. Barnes
Chairman of the Board,
Barnes Group Inc.

Elijah K. Barnes
Principal, Avison Young

Patrick J. Dempsey
President and Chief Executive Officer,
Barnes Group Inc.

Jakki L. Haussler
Non-Executive Chairman
Opus Capital Management, Inc.

Richard J. Hipple
Former Executive Chairman,
Materion Corporation

Thomas J. Hook
Chief Executive Officer,
SaniSure, Inc.

Daphne E. Jones
Former Senior Vice President,
Digital/Future of Work for GE
Healthcare

Mylle H. Mangum
Chief Executive Officer,
IBT Enterprises, LLC

Hans-Peter Männer
Managing Director,
HPM Invest GmbH

William J. Morgan
Former Partner,
KPMG LLP

Anthony V. Nicolosi
Former Partner,
KPMG LLP

JoAnna L. Sohovich
Chair, Board of Directors
Chamberlain Group

Officers

Patrick J. Dempsey
President and Chief Executive Officer

Marian Acker
Vice President, Controller

Michael A. Beck
Senior Vice President,
Barnes Group Inc. and
President, Barnes Aerospace

Dawn N. Edwards
Senior Vice President,
Human Resources

Lukas Hovorka
Senior Vice President,
Corporate Development

Patrick T. Hurley
Senior Vice President and
Chief Technology Officer

Michael V. Kennedy
Vice President,
Tax and Treasury

Stephen G. Moule
Senior Vice President, Barnes Group
Inc. and President, Barnes Industrial

Julie K. Streich
Senior Vice President, Finance and
Chief Financial Officer

Corporate Information

Transfer Agent and Registrar
Computershare
P.O. Box 505000
Louisville, KY 40233-5000

Phone: 1-800-801-9519 Within USA, US territories & Canada

Phone: 1-201-680-6578 Outside USA, US territories & Canada

For the hearing impaired:

1-800-952-9245 Within USA, US territories & Canada

1-781-575-4592 Outside USA, US territories & Canada

www.computershare.com/investor

Use the above address, phone numbers and Internet address for information about the following services:

Direct Deposit of Dividends, Stockholders Inquiries, Change of Name or Address, Consolidations, Lost Certificates, Replacement.

Direct Stock Purchase Plan/
Dividend Reinvestment
Initial purchases of Barnes Group common stock can be made through the Direct Stock Purchase Plan. Dividends on Barnes Group common stock may be automatically invested in additional shares.

Stock Exchange
New York Stock Exchange
Stock Trading Symbol: B

Independent Registered Public Accounting Firm
PricewaterhouseCoopers LLP
185 Asylum Street, Hartford, CT 06103

Communications
For press releases and other information about the Company, go to our Internet address at www.barnesgroupinc.com or contact:

Investor Relations
William E. Pitts
Vice President, Investor Relations
IR@BGInc.com

Barnes
123 Main Street
Bristol, CT 06010-6376 USA
Phone: 1-860-583-7070

Annual Meeting

The Barnes Group Inc. Annual Meeting of Stockholders will be held at **11:00 a.m. E.T., Friday, May 6, 2022.** For your convenience, the 2022 Annual Meeting will be a hybrid meeting. This means that you may attend the Annual Meeting either in person at the DoubleTree by Hilton Hotel, Bristol, Connecticut, or virtually via a live audio webcast by clicking on www.virtualshareholdermeeting.com/B2022 at the time and date noted above.

If you were a stockholder as of the close of business on March 11, 2022, you may vote during the Annual Meeting either in person or by following the instructions available on the meeting website during the live audio webcast provided you have your control number. The control number can be found on your proxy card, voting instruction form or notice you previously received. If you do not have your control number, you may attend the live audio webcast as a guest (non-stockholder), but will not have the option to vote your shares via the live audio webcast.

Note: As part of our COVID-19 precautions and related public health measures, we will monitor the need to potentially alter the location of the Annual Meeting of Stockholders or to switch to solely a virtual meeting format. If we take this step, we will announce the decision to do so in advance via a press release and the filing of necessary proxy materials with the Securities and Exchange Commission. Please monitor our website at www.barnesgroupinc.com for updated information. If you are planning to attend our meeting in person, please check the website one week prior to the meeting date. As always, we encourage you to vote your shares prior to the meeting.

Corporate Office
123 Main Street
Bristol, CT 06010-6376
USA
barnesgroupinc.com