UNITED STATES SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549
Form 10-K

☑ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15 OF THE SECURITIES EXCHANGE ACT OF 1934**
FOR THE FISCAL YEAR ENDED DECEMBER 31, 2017

OR

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

Commission file number 1-13179

FLOWSERVE CORPORATION
(Exact name of registrant as specified in its charter)

New York	**31-0267900**
(State or other jurisdiction of incorporation or organization)	*(I.R.S. Employer Identification No.)*
5215 N. O'Connor Boulevard	**75039**
Suite 2300, Irving, Texas	*(Zip Code)*
(Address of principal executive offices)	

Registrant's telephone number, including area code:
(972) 443-6500
Securities registered pursuant to Section 12(b) of the Act:

Title of Each Class	Name of Each Exchange on Which Registered
Common Stock, $1.25 Par Value	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 o

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 o 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 o

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted 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 and post such files). Yes ☑ No o

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. o

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

Large accelerated filer ☑	Accelerated filer o	Non-accelerated filer o	Smaller Reporting company o
Emerging growth company o			

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. ☐

(Do not check if a smaller reporting company)

Indicate by check mark whether the registrant is a shell company. Yes o No ☑

The aggregate market value of the common stock held by non-affiliates of the registrant, computed by reference to the closing price of the registrant's common stock as reported on June 30, 2017 (the last business day of the registrant's most recently completed second fiscal quarter), was approximately $2,637,661,974. For purposes of the foregoing calculation only, all directors, executive officers and known 5% beneficial owners have been deemed affiliates.

Number of the registrant's common shares outstanding as of February 21, 2018 was 130,797,826.

DOCUMENTS INCORPORATED BY REFERENCE

Certain information contained in the definitive proxy statement for the registrant's 2018 Annual Meeting of Shareholders scheduled to be held on May 24, 2018 is incorporated by reference into Part III hereof.

FLOWSERVE CORPORATION
FORM 10-K

TABLE OF CONTENTS

PART I

ITEM 1. *BUSINESS*

OVERVIEW

Flowserve Corporation is a world leading manufacturer and aftermarket service provider of comprehensive flow control systems. Flowserve Corporation as it exists today was created in 1997 through the merger of two leading fluid motion and control companies — BW/IP and Durco International. Under the name of a predecessor entity, we were incorporated in the State of New York on May 1, 1912, but some of our heritage product brand names date back to our founding in 1790. Over the years, we have evolved through organic growth and strategic acquisitions, and our over 225-year history of Flowserve heritage brands serves as the foundation for the breadth and depth of our products and services today. Unless the context otherwise indicates, references to "Flowserve," "the Company" and such words as "we," "our" and "us" include Flowserve Corporation and its subsidiaries.

We develop and manufacture precision-engineered flow control equipment integral to the movement, control and protection of the flow of materials in our customers' critical processes. Our product portfolio of pumps, valves, seals, automation and aftermarket services supports global infrastructure industries, including oil and gas, chemical, power generation (including nuclear, fossil and renewable) and water management, as well as certain general industrial markets where our products and services add value. Through our manufacturing platform and global network of Quick Response Centers ("QRCs"), we offer a broad array of aftermarket equipment services, such as installation, advanced diagnostics, repair and retrofitting.

We sell our products and services to more than 10,000 companies, including some of the world's leading engineering, procurement and construction firms ("EPC"), original equipment manufacturers, distributors and end users. Our products and services are used in several distinct industries having a broad geographic reach. Our bookings mix by industry in 2017 and 2016 consisted of:

	2017	2016
• oil and gas	38%	36%
• general industries(1)	24%	25%
• chemical	21%	21%
• power generation	13%	14%
• water management	4%	4%

(1) General industries include mining and ore processing, pharmaceuticals, pulp and paper, food and beverage and other smaller applications, as well as sales to distributors whose end customers typically operate in the industries we primarily serve.

The breakdown of the geographic regions to which our sales were shipped in 2017 and 2016 were as follows:

	2017	2016
• North America	40%	40%
• Europe	23%	22%
• Asia Pacific	19%	18%
• Middle East and Africa	13%	13%
• Latin America	5%	7%

We have pursued a strategy of industry diversity and geographic breadth to mitigate the impact on our business of normal economic downturns in any one of the industries or in any particular part of the world we serve. For events that may occur and adversely impact our business, financial condition, results of operations and cash flows, refer to "Item 1A. Risk Factors" of this Annual Report on Form 10-K for the year ended December 31, 2017 ("Annual Report"). For information on our sales and long-lived assets by geographic areas, see Note 16 to our consolidated financial statements included in "Item 8. Financial Statements and Supplementary Data" ("Item 8") of this Annual Report.

We conduct our operations through three business segments based on type of product and how we manage the business:

- Engineered Product Division ("EPD") for long lead time, custom and other highly-engineered pumps and pump systems, mechanical seals, auxiliary systems and replacement parts and related services;

- Industrial Product Division ("IPD") for engineered and pre-configured industrial pumps and pump systems and related products and services; and
- Flow Control Division ("FCD") for engineered and industrial valves, control valves, actuators and controls and related services.

Our business segments share a focus on industrial flow control technology and benefit from our global footprint and our economies of scale in reducing administrative and overhead costs to serve customers more cost effectively. EPD and IPD have a high number of common customers and complementary product offerings and technologies that are often combined in applications that provide us a net competitive advantage. All segments share certain resources and functions, including elements of research and development ("R&D"), supply chain, safety, quality assurance and administrative functions that provide efficiencies and an overall lower cost structure.

Our operations leadership reports to our Chief Executive Officer and the segments share leadership for operational support functions such as R&D, marketing and supply chain. We believe this leadership structure positions the Company to leverage operational excellence, cost reduction initiatives and internal synergies across our entire operating platform to drive further growth and increase shareholders' value.

Strategies

Our overarching objectives are to be a leader in each of the market segments we serve and become the employer of choice in the flow control industry. Additionally, we seek to be recognized by our customers as the most trusted brand in terms of reliability and quality, which we believe will help maximize shareholder value.

In pursuit of these objectives, we maintain a rolling, five-year strategic plan that takes a balanced approach to integrating both short-term and long-term initiatives in four key areas: People, Process & Technology, Customer and Finance.

People

With the goal of developing and maintaining a people-first culture that produces the finest talent, we focus on several elements in our strategic efforts to continuously enhance our organizational capability, including: (i) fully committing to providing a safe work environment for all our associates, worldwide, (ii) upholding a high-performance workforce, that is empowered, accountable, and flexible, (iii) becoming the employer of choice by fostering a people-first culture and (iv) recruiting, developing, and retaining a global and diverse workforce.

Process and Technology

With the goal of improving our productivity and delivering a continuous stream of innovating solutions to our customers, we focus on select strategies relating to: (i) developing and maintaining an enterprise-first business approach across all operating units and functional organizations, (ii) simplifying our business processes and optimizing corporate structural costs, (iii) significantly reducing our product cost and rationalizing our product portfolio and (iv) becoming the technical leader in the flow control industry.

Customer

With the goal of achieving the highest level of customer satisfaction amongst our peers, we focus on select strategies related to rigorous and disciplined selection of target markets and customers, while maintaining competitive lead times and emphasizing the highest levels of on-time delivery and quality. We seek to provide an outstanding experience for our customers over the entire product lifecycle by providing unique, integrated flow-control solutions that solve real-world application problems in our customers’ facilities.

Finance

With the goal of growing the value of our enterprise, we focus on select strategies we believe will increase our revenue above the rate of market growth, while optimizing performance in terms of gross margin, selling, general and administrative ("SG&A") expense, operating margin, cash flow and primary working capital.

Competition

Despite consolidation activities in past years, the markets for our products remain highly competitive, with primary competitive drivers being price, reputation, project management, timeliness of delivery, quality, proximity to service centers and technical expertise, as well as contractual terms and previous installation history. In the pursuit of large capital projects, competitive drivers and competition vary depending on the industry and products involved. Industries experiencing slow growth generally tend to have a competitive environment more heavily influenced by price due to supply outweighing demand, and price competition tends to be more significant for original equipment orders than aftermarket services. Considering the current forecasts for 2018, pricing for original equipment orders may continue to be a particularly influential competitive factor. The unique competitive environments in each of our three business segments are discussed in more detail under the “Business Segments” heading below.

In the aftermarket portion of our business, we compete against large, well-established national and global competitors and, in some markets, against regional and local companies. In the oil and gas and chemical industries, the primary competitors for aftermarket services tend to be customers’ own in-house capabilities. In the nuclear power generation industry, we possess certain competitive advantages due to our "N Stamp" certification, which is a prerequisite to serve customers in that industry, as well as our considerable base of proprietary knowledge. Aftermarket competition for standardized products is aggressive due to the existence of common standards allowing for easier replacement or repair of the installed products.

In the sale of aftermarket products and services, we benefit from our large installed base of pumps, valves and seals, which continually require maintenance, repair and replacement parts due to the nature of the products and the conditions under which they operate. Timeliness of delivery, quality and the proximity of service centers are important customer considerations when selecting a provider for aftermarket products and services. In geographic regions where we are locally positioned to provide a quick response, customers have traditionally relied on us, rather than our competitors, for aftermarket products relating to our highly-engineered and customized products, although we are seeing increased competition in this area.

Generally, our customers attempt to reduce the number of vendors from which they purchase, thereby reducing the size and diversity of their supply chain. Although vendor reduction programs could adversely affect our business, we have been successful in establishing long-term supply agreements with a number of customers. While the majority of these agreements do not provide us with exclusive rights, they can provide us a "preferred" status with our customers and thereby increase opportunities to win future business. We also utilize our LifeCycle Advantage program to establish fee-based contracts to manage customers’ aftermarket requirements. These programs provide an opportunity to manage the customer’s installed base and expand the business relationship with the customer.

Our ability to use our portfolio of products, solutions and services to meet customer needs is a competitive strength. Our market approach is to create value for our customers throughout the life cycle of their investments in flow control management. We continue to explore and develop potential new offerings in conjunction with our customers. In the early phases of project design, we endeavor to create value in optimizing the selection of equipment for the customer’s specific application, as we are capable of providing technical expertise on product and system capabilities even outside the scope of our specific products, solutions and services. After the equipment is constructed and delivered to the customer’s site, we continue to create value through our aftermarket capabilities by optimizing the performance of the equipment over its operational life. Our skilled service personnel can provide these aftermarket services for our products, as well as many competitors’ products, within the installed base. This value is further enhanced by the global reach of our QRCs and, when combined with our other solutions for our customers’ flow control management needs, allows us to create value for our customers during all phases of the capital and operating expenditure cycles.

New Product Development

We spent $38.6 million, $42.8 million and $45.9 million during 2017, 2016 and 2015, respectively, on company-sponsored R&D initiatives. Our R&D group consists of engineers involved in new product development and improvement of existing products. Additionally, we sponsor consortium programs for research with various universities and jointly conduct limited development work with certain vendors, licensees and customers. We believe our R&D expenditures are adequate to sustain our ongoing and necessary future product development. In addition, we work closely with our customers on customer-sponsored research activities to help execute their R&D initiatives in connection with our products and services. New product development in each of our three business segments is discussed in more detail under the "Business Segments" heading below.

Customers

We sell to a wide variety of customers globally including leading EPC firms, original equipment manufacturers, distributors and end users in several distinct industries: oil and gas, chemical, power generation, water management and general industries. We do not believe we have sales to any individual customer that represent 10% or more of consolidated 2017 revenues. Customer information relating to each of our three business segments is discussed in more detail under the "Business Segments" heading below.

We are not normally required to carry unusually high amounts of inventory to meet customer delivery requirements, although higher backlog levels and longer lead times generally require higher amounts of inventory. We typically require advance cash payments from customers on longer lead time projects to help offset our investment in inventory. We have initiated programs targeted at improving our operational effectiveness to reduce our overall working capital needs. While we do provide cancellation policies through our contractual relationships, we generally do not provide rights of product return for our customers.

Selling and Distribution

We primarily distribute our products through direct sales by employees assigned to specific regions, industries or products. In addition, we use distributors and sales representatives to supplement our direct sales force in countries where it is more appropriate due to business practices or customs, or whenever the use of direct sales staff is not economically efficient. We generate a majority of our sales leads through existing relationships with vendors, customers and prospects or through referrals.

Intellectual Property

We own a number of trademarks and patents relating to the names and designs of our products. We consider our trademarks and patents to be valuable assets of our business. In addition, our pool of proprietary information, consisting of know-how and trade secrets related to the design, manufacture and operation of our products, is considered particularly valuable. Accordingly, we take proactive measures to protect such proprietary information. We generally own the rights to the products that we manufacture and sell and are unencumbered by licensing or franchise agreements. Our trademarks can typically be renewed indefinitely as long as they remain in use, whereas our existing patents generally expire 10 to 20 years from the dates they were filed, which has occurred at various times in the past. We do not believe that the expiration of any individual patent will have a material adverse impact on our business, financial condition or results of operations.

Raw Materials

The principal raw materials used in manufacturing our products are readily available and include ferrous and non-ferrous metals in the form of bar stock, machined castings, fasteners, forgings and motors, as well as silicon, carbon faces, gaskets and fluoropolymer components. A substantial volume of our raw materials is purchased from outside sources, and we have been able to develop a robust supply chain and anticipate no significant shortages of such materials in the future. We continually monitor the business conditions of our suppliers to manage competitive market conditions and to avoid potential supply disruptions. We continue to expand global sourcing to capitalize on localization in emerging markets and low-cost sources of purchased goods balanced with efficient consolidated and compliant logistics.

Metal castings used in the manufacture of our pump, valve, and mechanical seals are purchased from qualified and approved foundry sources. We remain vertically integrated with metal castings in certain strategic product families.

Concerning the products we supply to customers in the nuclear power generation industry, suppliers of raw materials for nuclear power generation markets must be qualified to meet the requirements of nuclear industry standards and governmental regulations. Supply channels for these materials are currently adequate, and we do not anticipate difficulty in obtaining such materials in the future.

Employees and Labor Relations

We have approximately 17,000 employees globally as of December 31, 2017. In the United States ("U.S."), a portion of the hourly employees at our pump manufacturing plant located in Vernon, California, our valve manufacturing plant located in Lynchburg, Virginia and our pattern storage facility located in Dayton, Ohio, are represented by unions. Additionally, some employees at select facilities in the following countries are unionized or have employee works councils: Argentina, Australia, Austria, Brazil, Finland, France, Germany, India, Italy, Japan, Mexico, The Netherlands, Spain, South Africa, Sweden and the United Kingdom ("U.K."). We believe relations with our employees throughout our operations are generally satisfactory, including those employees represented by unions and employee works councils. No unionized facility accounted for more than 10% of our consolidated 2017 revenues.

Environmental Regulations and Proceedings

We are subject to environmental laws and regulations in all jurisdictions in which we have operating facilities. These requirements primarily relate to the generation and disposal of waste, air emissions and waste water discharges. We periodically make capital expenditures to enhance our compliance with environmental requirements, as well as to abate and control pollution. At present, we have no plans for any material capital expenditures for environmental control equipment at any of our facilities. However, we have incurred and continue to incur operating costs relating to ongoing environmental compliance matters. Based on existing and proposed environmental requirements and our anticipated production schedule, we believe that future environmental compliance expenditures will not have a material adverse effect on our financial condition, results of operations or cash flows.

We use hazardous substances and generate hazardous wastes in many of our manufacturing and foundry operations. Most of our current and former properties are or have been used for industrial purposes and some may require clean-up of historical contamination. During the due diligence phase of our acquisitions, we conduct environmental site assessments to identify potential environmental liabilities and required clean-up measures. We are currently conducting follow-up investigation and/or remediation activities at those locations where we have known environmental concerns. We have cleaned up a majority of the sites with known historical contamination and are addressing the remaining identified issues.

Over the years, we have been involved as one of many potentially responsible parties ("PRP") at former public waste disposal sites that are or were subject to investigation and remediation. We are currently involved as a PRP at five Superfund sites. The sites are in various stages of evaluation by government authorities. Our total projected "fair share" cost allocation at these five sites is expected to be immaterial. See "Item 3. Legal Proceedings" included in this Annual Report for more information.

We have established reserves that we currently believe to be adequate to cover our currently identified on-site and off-site environmental liabilities.

Exports

Our export sales from the U.S. to foreign unaffiliated customers were $258.3 million in 2017, $259.1 million in 2016 and $295.6 million in 2015.

Licenses are required from U.S. and other government agencies to export certain products. In particular, products with nuclear power generation and/or military applications are restricted, as are certain other pump, valve and seal products.

BUSINESS SEGMENTS

In addition to the business segment information presented below, Note 16 to our consolidated financial statements in Item 8 of this Annual Report contains additional financial information about our business segments and geographic areas in which we have conducted business in 2017, 2016 and 2015.

ENGINEERED PRODUCT DIVISION

Our largest business segment is EPD, through which we design, manufacture, distribute and service specialty, custom and other highly-engineered pumps and pump systems, mechanical seals, auxiliary systems, replacement parts, upgrades and related aftermarket services. EPD includes longer lead time, highly-engineered specialty pump products and systems and mechanical seals that are generally manufactured within shorter lead times. EPD also manufactures replacement pumps, part upgrades and provides a full array of replacement parts, repair and support services (collectively referred to as "aftermarket"). EPD products and services are primarily used by companies that operate in the oil and gas, power generation, petrochemical, chemical, water management and other general industries. We market our pump and mechanical seal products through our global sales force and our regional QRCs and service and repair centers or through independent distributors and sales representatives. A portion of our mechanical seal products are sold directly to other original equipment manufacturers for incorporation into their rotating equipment requiring mechanical seals.

Our engineered pump products are manufactured in a wide range of metal alloys and with a variety of configurations to reliably meet the operating requirements of our customers. Mechanical seals are critical to the reliable operation of rotating equipment in that they prevent leakage and emissions of hazardous substances from the rotating equipment and reduce shaft wear on the equipment caused by the use of non-mechanical seals. We also manufacture a gas-lubricated mechanical seal that is used in high-speed compressors for gas pipelines and in the oil and gas production and process markets. Our products are currently manufactured at 30 plants worldwide, nine of which are located in Europe, nine in North America, seven in Asia Pacific and five in Latin America, including those co-located in manufacturing facilities and/or shared with FCD.

We also conduct business through strategic foreign joint ventures. We have six unconsolidated joint ventures that are located in China, India, Saudi Arabia, South Korea and the United Arab Emirates, where a portion of our products are manufactured, assembled or serviced in these territories. These relationships provide numerous strategic opportunities, including increased access to our current and new markets, access to additional manufacturing capacity and expansion of our operational platform to support best-cost sourcing initiatives and balance capacity demands for other markets.

EPD Products

We manufacture more than 40 different active types of pumps and approximately 185 different models of mechanical seals and sealing systems. The following is a summary list of our EPD product types and globally recognized brands:

EPD Product Types

Single and Multistage Between Bearings Pumps
- Single Case — Axially Split
- Single Case — Radially Split
- Double Case

Single Stage Overhung Pumps
- API Process

Positive Displacement Pumps
- Rotary Multiphase
- Rotary Screw

Mechanical Seals and Seal Support Systems
- Dry-Running Seals
- Gas Barrier Seals
- Standard Cartridge Seals
- Mixer Seals
- Compressor Seals
- Seal Support Systems
- Bearing Isolators
- Barrier Fluids and Lubricants

Vertical Pumps
- Vertical inline
- Vertical line shaft
- Vertical canned shaft

Specialty Products
- Nuclear Pumps
- Nuclear Seals
- Cryogenic Pumps
- Concrete Volute Pumps
- Wireless Transmitters
- Ebullator recycle pumps
- Power Recovery — DWEER
- Power Recovery — Hydro turbine
- Energy Recovery Devices
- Hydraulic Decoking Systems
- API Slurry Pumps

EPD Brand Names

- BW Seals
- Byron Jackson
- Calder Energy Recovery Devices
- Cameron
- Durametallic
- FEDD Wireless
- Five Star Seal
- Flowserve
- GASPAC™
- IDP
- Interseal
- Lawrence
- LifeCycle Advantage
- Niigata Worthington
- QRC™
- Pacific
- Pacific Weitz
- Pac-Seal
- ReadySeal
- United Centrifugal
- Western Land Roller
- Wilson-Snyder
- Worthington
- Worthington-Simpson

EPD Services

We provide engineered aftermarket services through our global network of 123 QRCs, some of which are co-located in manufacturing facilities, in 47 countries. Our EPD service personnel provide a comprehensive set of equipment services for flow management control systems, including installation, commissioning, repair, advanced diagnostics, re-rate and retrofit programs, machining and comprehensive asset management solutions. We provide asset management services and condition monitoring for rotating equipment through special contracts with many of our customers that reduce maintenance costs. A large portion of EPD’s service work is performed on a quick response basis, and we offer 24-hour service in all of our major markets.

EPD New Product Development

Our investments in new product R&D continue to focus on increasing the capability of our products as customer applications become more advanced, demanding greater levels of production (i.e., flow and power) and under more extreme conditions (i.e., erosive, corrosive and temperature) beyond the level of traditional technology. We continue to develop innovations that improve product hydraulic performance and our competitive position in the engineered equipment industry, specifically upstream, offshore and downstream applications for the oil and gas market. Continued engagement with our end users is exemplified through completion of advancements in high energy designs and high specific-speed hydraulics.

As new sources of energy generation are explored, we continue to develop new product designs to support the most critical applications in the power generation market. New designs and qualification test programs continue to support the critical services found in the coal fired, combined cycle, small modular nuclear and concentrated solar power generation plant.

We continue to address our core products with design enhancements to improve performance, reduce costs and the speed at which we can deliver our products. Our engineering teams continue to apply and develop sophisticated design technology and methods supporting continuous improvement of our proven technology. Additionally, we are incentivizing our operations and tracking the R&D projects more closely, which is leading to broader engagement in developing new products.

In 2017, EPD continued to advance our Intelligent Performance Solutions ("IPS") Insight platform. This platform utilizes a combination of our developed technologies and leading edge technology partners to increase our remote monitoring, diagnostics, asset management and service capabilities for our end-user customers. These technologies include intelligent devices, advanced communication and security protocols, wireless and satellite communications and web-enabled data convergence. Additionally, we have been exploring "additive manufacturing" opportunities in our products and auxiliary systems.

None of these newly developed products or services required the investment of a material amount of our assets or was otherwise material to our business.

EPD Customers

Our customer mix is diversified and includes leading EPC firms, major national oil companies, international oil companies, equipment end users in our served markets, other original equipment manufacturers, distributors and end users. Our sales mix of original equipment products and aftermarket products and services diversifies our business and helps mitigate the impact of normal economic cycles on our business. Our sales are diversified among several industries, including oil and gas, power generation, petrochemical, chemical, water management and general industries.

EPD Competition

The pump and mechanical seal industry is highly fragmented, with thousands of competitors globally. We compete, however, primarily with a limited number of large companies operating on a global scale. Competition among our closest competitors is generally driven by delivery times, application knowledge, experience, expertise, price, breadth of product offerings, contractual terms, previous installation history and reputation for quality. Some of our largest industry competitors include: Sulzer Pumps; Ebara Corp.; SPX FLOW, Inc.; Eagle Burgmann, which is a joint venture of two traditional global seal manufacturers, A. W. Chesterton Co. and AES Corp.; John Crane Inc., a unit of Smiths Group Plc; and Weir Group Plc.

The pump and mechanical seal industry continues to undergo considerable consolidation, which is primarily driven by (i) the need to lower costs through reduction of excess capacity and (ii) customers’ preference to align with global full service suppliers to simplify their supplier base. Despite the consolidation activity, the market remains highly competitive.

We believe that our strongest sources of competitive advantage rest with our extensive range of pumps for the oil and gas, petrochemical, chemical and power generation industries, our large installed base of products, our strong customer relationships, our high technology, our more than 225 years of experience in manufacturing and servicing pumping equipment, our reputation for providing quality engineering solutions and our ability to deliver engineered new seal product orders within 72 hours from the customer’s request.

EPD Backlog

EPD's backlog of orders as of December 31, 2017 was $1,027.7 million (including $16.0 million of interdivision backlog, which is eliminated and not included in consolidated backlog), compared with $968.8 million (including $11.7 million of interdivision backlog) as of December 31, 2016. We expect to ship approximately 94% of December 31, 2017 backlog during 2018.

INDUSTRIAL PRODUCT DIVISION

Through IPD we design, manufacture, pre-test, distribute and service engineered and pre-configured industrial pumps and pump systems, including submersible motors, for variety of markets. Our globalized operating platform, low-cost sourcing and continuous improvement initiatives are essential aspects of this business. IPD's standardized, general purpose pump products are primarily utilized by the oil and gas, chemical, water resources, power and general industrial (i.e. Mining, Steel and Paper) industries. Our products are currently manufactured in 19 manufacturing facilities, five of which are located in the U.S and eight in Europe and six in Asia. IPD operates 30 QRCs worldwide, including 19 sites in Europe, six in the U.S., three in Asia Pacific and two in Latin America, including those co-located in manufacturing facilities and/or shared with EPD.

IPD Products

We manufacture approximately 40 different active types of pumps, which are available in a wide range of metal alloys and non-metallics with a variety of configurations to meet the critical operating demands of our customers. The following is a summary list of our IPD products and globally recognized brands:

IPD Pump Product Types

Overhung
- Chemical Process ASME and ISO
- Industrial Process
- Slurry and Solids Handling
- Metallic & Lined Magnetic Drive Process

Specialty Products
- Ag Chem
- Molten Salt Pump
- Submersible Pump
- Thruster
- Geothermal Deepwell
- Barge Pump
- Solids Handling Submersible

Positive Displacement
- Gear

Between Bearings
- Side Channel Multistage
- Segmental Channel Multistage
- Split Case — Axially Split
- Split Case — Radially Split

Vertical
- Wet Pit, Double case API & Double
- Deepwell Submersible Pump and Motor
- Slurry and Solids Handling
- Sump & Cantilever

Vacuum Systems
- Liquid Ring
- LR Systems
- Dry Systems

IPD Brand Names

- Aldrich
- Durco
- Flowserve
- Halberg
- IDP
- Innomag
- Labour
- Meregalli
- Pacific
- Pleuger & Byron Jackson
- Scienco
- Sier Bath
- SIHI
- TKL
- Western Land Roller
- Worthington
- Worthington-Simpson

IPD Services

We market our pump products through our worldwide sales force, regional service and repair centers through independent distributors and sales representatives. We provide an array of aftermarket services including product installation and commissioning services, seal systems spare parts, repairs, re-rate and upgrade solutions, advanced diagnostics and maintenance solutions through our global network of QRCs.

IPD New Product Development

Our IPD development projects target product feature enhancements, design improvements and sourcing opportunities that we believe will improve the competitive position of our industrial pump product lines. We will invest in our Durco and SIHI chemical product platform to expand and enhance our products offered to the global chemical industry.

We continue to address our core products with design enhancements to improve performance and the speed at which we can deliver our products. Successful new product release of permanent magnet motor technology in our submersible motor products demonstrated improved product efficiency. We will further our energy efficiency initiatives in response to various global governmental directives. Cost reduction projects incorporating product rationalization, value engineering, lean manufacturing and overhead reduction continue to be key drivers for IPD.

None of these newly developed products or services required the investment of a material amount of our assets or was otherwise material.

IPD Customers

Our customer mix is diversified and includes leading EPC firms, original equipment manufacturers, distributors and end users. Our sales mix of original equipment products and aftermarket products and services diversifies our business and helps mitigate the impact of normal economic cycles on our business. Our sales are diversified among several industries, including oil and gas, chemical, water resources, power and general industry industries.

IPD Competition

The industrial pump industry is highly fragmented, with many competitors. We compete, however, primarily with a limited number of large companies operating on a global scale. Competition among our closest competitors is generally driven by delivery times, expertise, price, breadth of product offerings, contractual terms, previous installation history and reputation for quality. Some of our largest industry competitors include ITT Industries, KSB SE & Co. KGaA and Sulzer Pumps.

We believe that our strongest sources of competitive advantage rest with our extensive range of pumps for the chemical industry, our large installed base, our strong customer relationships, our more than 200 years of legacy experience in manufacturing and servicing pumping equipment and our reputation for providing quality engineering solutions.

IPD Backlog

IPD's backlog of orders as of December 31, 2017 was $424.3 million (including $17.3 million of interdivision backlog, which is eliminated and not included in consolidated backlog), compared with $375.6 million (including $14.2 million of interdivision backlog) as of December 31, 2016. We expect to ship approximately 95% of December 31, 2017 backlog during 2018.

FLOW CONTROL DIVISION

FCD designs, manufactures, distributes and services a broad portfolio of industrial valve and automation solutions, including isolation and control valves, actuation, controls and related equipment. FCD leverages its experience and application know-how by offering a complete menu of engineering and project management services to complement its expansive product portfolio. FCD products are used to control, direct and manage the flow of liquids and gases and are an integral part of any flow control system. Our valve products are most often customized and engineered to perform specific functions within each customer's unique flow control environment.

Our flow control products are primarily used by companies operating in the chemical, power generation, oil and gas, water management and general industries. Our products are currently manufactured in 22 principal manufacturing facilities, 5 of which are located in the U.S., 10 located in Europe and six located in Asia Pacific. FCD operates 25 QRCs worldwide, including seven sites in Europe, nine in North America, seven in Asia Pacific and two in Latin America.

FCD Products

Our valve, automation and controls product and solutions portfolio represents one of the most comprehensive in the flow control industry. Our products are used in a wide variety of applications, from general service to the most severe and demanding services, including those involving high levels of corrosion, extreme temperatures and/or pressures, zero fugitive emissions and emergency shutdown.

Our “smart” valve and diagnostic technologies integrate sensors, microprocessor controls and software into high performance integrated control valves, digital positioners and switchboxes for automated on/off valve assemblies and electric actuators. These technologies permit real-time system analysis, system warnings and remote indication of asset health. These technologies have been developed in response to the growing demand for reduced maintenance, improved process control efficiency and digital communications at the plant level. We are committed to further enhancing the quality of our product portfolio by continuing to upgrade our existing offerings with cutting-edge technologies.

Our valve automation products encompass a broad range of pneumatic, electric, hydraulic and stored energy actuation designs to take advantage of whatever power source the customer has available. FCD’s actuation products can utilize the process fluid flowing through the pipeline as a source of power to actuate the valve. Our actuation products also cover one of the widest ranges of output torques in the industry, providing the ability to automate anything from the smallest linear globe valve to the largest multi-turn gate valve. Most importantly, FCD combines best-in-class mechanical designs with the latest in digital controls in order to provide complete integrated automation solutions that optimize the combined valve-actuator-controls package.

The following is a summary list of our generally available valve and automation products and globally recognized brands:

FCD Product Types

- Valve Automation Systems
- Control Valves
- Ball Valves
- Gate Valves
- Globe Valves
- Check Valves
- Butterfly Valves
- Lined Plug Valves
- Lined Ball Valves
- Lubricated Plug Valves
- Non-Lubricated Plug Valves
- Integrated Valve Controllers
- Diagnostic Software
- Electro Pneumatic Positioners
- Digital Positioners
- Pneumatic Positioners
- Intelligent Positioners
- Electric/Electronic Actuators
- Pneumatic Actuators
- Hydraulic Actuators
- Diaphragm Actuators
- Direct Gas and Gas-over-Oil Actuators
- Limit Switches
- Digital Communications
- Valve and Automation Repair Services

FCD Brand Names

- Accord
- Anchor/Darling
- Argus
- Atomac
- Automax
- Durco
- Edward
- Flowserve
- Kammer
- Limitorque
- McCANNA/MARPAC
- NAF
- Noble Alloy
- Norbro
- Nordstrom
- PMV
- Serck Audco
- Schmidt Armaturen
- Valbart
- Valtek
- Worcester Controls

FCD Services

Our service personnel provide comprehensive equipment maintenance services for flow control systems, including advanced diagnostics, repair, installation, commissioning, retrofit programs and field machining capabilities. A large portion of our service work is performed on a quick response basis, which includes 24-hour service in all of our major markets. We also provide in-house repair and return manufacturing services worldwide through our manufacturing facilities. We believe our ability to offer comprehensive, quick turnaround services provides us with a unique competitive advantage and unparalleled access to our customers' installed base of flow control products.

FCD New Product Development

Our R&D investment is focused on areas that will advance our technological leadership and further differentiate our competitive advantage from a product perspective. Investment has been focused on significantly enhancing the digital integration and interoperability of valve top-works (e.g., positioners, actuators, limit switches and associated accessories) with Distributed Control Systems ("DCS"). We continue to pursue the development and deployment of next-generation hardware and software for valve diagnostics and the integration of the resulting device intelligence through the DCS to provide a practical and effective asset management capability for the end user. In addition to developing these new capabilities and value-added services, our investments also include product portfolio expansion and fundamental research in material sciences in order to increase the temperature, pressure and corrosion/erosion-resistance limits of existing products, as well as noise and cavitation reduction. These investments are made by adding new resources and talent to the organization, as well as leveraging the experience of EPD and IPD and increasing our collaboration with third parties. We expect to continue our R&D investments in the areas discussed above.

None of these newly developed valve products or services required the investment of a material amount of our assets or was otherwise material.

FCD Customers

Our customer mix spans several markets, including the chemical, power generation, oil and gas, water management, pulp and paper, mining and other general industries. Our product mix includes original equipment and aftermarket parts and services. FCD contracts with a variety of customers, ranging from EPC firms, to distributors, end users and other original equipment manufacturers.

FCD Competition

While in recent years the valve market has undergone a significant amount of consolidation, the market remains highly fragmented. Some of the largest valve industry competitors include Cameron International Corp. (a Schlumberger company), Emerson Electric Co., General Electric Co. and Crane Co.

Our market research and assessments indicate that the top 10 global valve manufacturers collectively comprise less than 15% of the total valve market. Based on independent industry sources, we believe that we are the third largest industrial valve supplier in the world. We believe that our strongest sources of competitive advantage rest with our comprehensive portfolio of valve products and services, our focus on execution and our expertise in severe corrosion and erosion applications.

FCD Backlog

FCD's backlog of orders as of December 31, 2017 was $617.4 million, compared with $584.5 million as of December 31, 2016. We expect to ship approximately 87% of December 31, 2017 backlog during 2018.

AVAILABLE INFORMATION

We maintain an Internet web site at www.flowserve.com. Our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K and any amendments to those reports filed or furnished pursuant to Section 13(a) of the Securities Exchange Act of 1934 are made available free of charge through the "Investor Relations" section of our Internet web site as soon as reasonably practicable after we electronically file the reports with, or furnish the reports to, the U.S. Securities and Exchange Commission ("SEC").

Also available on our Internet web site are our Corporate Governance Guidelines for our Board of Directors and Code of Ethics and Business Conduct, as well as the charters of the Audit, Finance, Organization and Compensation and Corporate Governance and Nominating Committees of our Board of Directors and other important governance documents. All of the foregoing documents may be obtained through our Internet web site as noted above and are available in print without charge to shareholders who request them. Information contained on or available through our Internet web site is not incorporated into this Annual Report or any other document we file with, or furnish to, the SEC.

ITEM 1A. *RISK FACTORS*

Any of the events discussed as risk factors below may occur. If they do, our business, financial condition, results of operations and cash flows could be materially adversely affected. While we believe all known material risks are disclosed, additional risks and uncertainties not presently known to us, or that we currently deem immaterial, may also impair our business operations. Because of these risk factors, as well as other variables affecting our operating results, past financial performance may not be a reliable indicator of future performance, and historical trends should not be used to anticipate results or trends in future periods.

Our business depends on the levels of capital investment and maintenance expenditures by our customers, which in turn are affected by numerous factors, including the state of domestic and global economies, global energy demand, the cyclical nature of their markets, their liquidity and the condition of global credit and capital markets.

Demand for most of our products and services depends on the level of new capital investment and planned maintenance expenditures by our customers. The level of capital expenditures by our customers depends, in turn, on general economic conditions, availability of credit, economic conditions within their respective industries and expectations of future market behavior. Additionally, volatility in commodity prices can negatively affect the level of these activities and can result in postponement of capital spending decisions or the delay or cancellation of existing orders. The ability of our customers to finance capital investment and maintenance may also be affected by factors independent of the conditions in their industry, such as the condition of global credit and capital markets.

The businesses of many of our customers, particularly oil and gas companies, chemical companies and general industrial companies, are to varying degrees cyclical and have experienced periodic downturns. Our customers in these industries, particularly those whose demand for our products and services is primarily profit-driven, historically have tended to delay large capital projects, including expensive maintenance and upgrades, during economic downturns. For example, our chemical customers generally tend to reduce their spending on capital investments and operate their facilities at lower levels in a soft economic environment, which reduces demand for our products and services. Additionally, fluctuating energy demand forecasts and lingering uncertainty concerning commodity pricing, specifically the price of oil, can cause our customers to be more conservative in their capital planning, which may reduce demand for our products and services. Reduced demand for our products and services could result in the delay or cancellation of existing orders or lead to excess manufacturing capacity, which unfavorably impacts our absorption of fixed manufacturing costs. This reduced demand may also erode average selling prices in our industry. Any of these results could adversely affect our business, financial condition, results of operations and cash flows.

Additionally, some of our customers may delay capital investment and maintenance even during favorable conditions in their industries or markets. Despite these favorable conditions, the general health of global credit and capital markets and our customers' ability to access such markets may impact investments in large capital projects, including necessary maintenance and upgrades. In addition, the liquidity and financial position of our customers could impact capital investment decisions and their ability to pay in full and/or on a timely basis. Any of these factors, whether individually or in the aggregate, could have a material adverse effect on our customers and, in turn, our business, financial condition, results of operations and cash flows.

Volatility in commodity prices, effects from credit and capital market conditions and global economic growth forecasts could prompt customers to delay or cancel existing orders, which could adversely affect the viability of our backlog and could impede our ability to realize revenues on our backlog.

Our backlog represents the value of uncompleted customer orders. While we cannot be certain that reported backlog will be indicative of future results, our ability to accurately value our backlog can be adversely affected by numerous factors, including the health of our customers' businesses and their access to capital, volatility in commodity prices (e.g., copper, nickel, stainless steel) and economic uncertainty. While we attempt to mitigate the financial consequences of order delays and cancellations through contractual provisions and other means, if we were to experience a significant increase in order delays or cancellations that can result from the aforementioned economic conditions or other factors beyond our control, it could impede or delay our ability to realize anticipated revenues on our backlog. Such a loss of anticipated revenues could have a material adverse effect on our business, financial condition, results of operations and cash flows.

We may be unable to deliver our backlog on time, which could affect our revenues, future sales and profitability and our relationships with customers.

At December 31, 2017, backlog was $2.0 billion. In 2018, our ability to meet customer delivery schedules for backlog is dependent on a number of factors including, but not limited to, sufficient manufacturing plant capacity, adequate supply channel access to the raw materials and other inventory required for production, an adequately trained and capable workforce, project engineering expertise for certain large projects and appropriate planning and scheduling of manufacturing resources. Many of the contracts we enter into with our customers require long manufacturing lead times and contain penalty clauses related to on-time delivery. Failure to deliver in accordance with customer expectations could subject us to financial penalties, may result in damage to existing customer relationships and could have a material adverse effect on our business, financial condition, results of operations and cash flows.

We sell our products in highly competitive markets, which results in pressure on our profit margins and limits our ability to maintain or increase the market share of our products.

The markets for our products and services are geographically diverse and highly competitive. We compete against large and well-established national and global companies, as well as regional and local companies, low-cost replicators of spare parts and in-house maintenance departments of our end-user customers. We compete based on price, technical expertise, timeliness of delivery, contractual terms, previous installation history and reputation for quality and reliability. Competitive environments in slow-growth industries and for original equipment orders have been inherently more influenced by pricing and domestic and global economic conditions and current economic forecasts suggest that the competitive influence of pricing has broadened. Additionally, some of our customers have been attempting to reduce the number of vendors from which they purchase in order to reduce the size and diversity of their supply chain. To remain competitive, we must invest in manufacturing, technology, marketing, customer service and support and our distribution networks. No assurances can be made that we will have sufficient resources to continue to make the investment required to maintain or increase our market share or that our investments will be successful. If we do not compete successfully, our business, financial condition, results of operations and cash flows could be materially adversely affected.

We may be unable to successfully develop and introduce new products, which could limit our ability to grow and maintain our competitive position and adversely affect our financial condition, results of operations and cash flow.

The success of new and improved products and services depends on their initial and continued acceptance by our customers. Our businesses are affected by varying degrees of technological change and corresponding shifts in customer demand, which result in unpredictable product transitions, shortened life cycles and increased importance of being first to market with new products and services. We may experience difficulties or delays in the research, development, production and/or marketing of new products and services which may negatively impact our operating results and prevent us from recouping or realizing a return on the investments required to continue to bring these products and services to market.

If we are unable to obtain raw materials at favorable prices, our operating margins and results of operations may be adversely affected.

We purchase substantially all electric power and other raw materials we use in the manufacturing of our products from outside sources. The costs of these raw materials have been volatile historically and are influenced by factors that are outside our control. In recent years, the prices for energy, metal alloys, nickel and certain other of our raw materials have been volatile. While we strive to offset our increased costs through supply chain management, contractual provisions and our CIP initiative, where gains are achieved in operational efficiencies, our operating margins and results of operations and cash flows may be adversely affected if we are unable to pass increases in the costs of our raw materials on to our customers or operational efficiencies are not achieved.

Economic, political and other risks associated with international operations could adversely affect our business.

A substantial portion of our operations is conducted and located outside the U.S. We have manufacturing, sales or service facilities in more than 50 countries and sell to customers in over 90 countries, in addition to the U.S. Moreover, we primarily outsource certain of our manufacturing and engineering functions to, and source our raw materials and components from, China, Eastern Europe, India and Latin America. Accordingly, our business and results of operations are subject to risks associated with doing business internationally, including:

- instability in a specific country's or region's political or economic conditions, particularly economic conditions in Europe, and political conditions in Russia, the Middle East, Asia, North Africa, Latin America and other emerging markets;
- trade protection measures, such as tariff increases, and import and export licensing and control requirements;
- political or economic instability relating to the recent Brexit referendum in the United Kingdom;
- uncertainties related to any geopolitical, economic and regulatory effects or changes due to the 2016 U.S. presidential election;
- potentially negative consequences from changes in tax laws or tax examinations;
- difficulty in staffing and managing widespread operations;
- increased aging and slower collection of receivables, particularly in Latin America and other emerging markets;
- difficulty of enforcing agreements and collecting receivables through some foreign legal systems;
- differing and, in some cases, more stringent labor regulations;
- potentially negative consequences from fluctuations in foreign currency exchange rates;
- partial or total expropriation;
- differing protection of intellectual property;
- inability to repatriate income or capital; and
- difficulty in administering and enforcing corporate policies, which may be different than the customary business practices of local cultures.

For example, political unrest or work stoppages could negatively impact the demand for our products from customers in affected countries and other customers, such as U.S. oil refineries, that could be affected by the resulting disruption in the supply of crude oil. Similarly, military conflicts in Russia, the Middle East, Asia and North Africa could soften the level of capital investment and demand for our products and services.

In order to manage our day-to-day operations, we must overcome cultural and language barriers and assimilate different business practices. In addition, we are required to create compensation programs, employment policies and other administrative programs that comply with laws of multiple countries. We also must communicate and monitor standards and directives across our global network. Our failure to successfully manage our geographically diverse operations could impair our ability to react quickly to changing business and market conditions and to enforce compliance with standards and procedures.

Our future success will depend, in large part, on our ability to anticipate and effectively manage these and other risks associated with our international operations. Any of these factors could, however, materially adversely affect our international operations and, consequently, our financial condition, results of operations and cash flows.

Our operations are subject to a variety of complex and continually changing laws and regulations, both internationally and domestically.

Due to the international scope of our operations, the system of laws and regulations to which we are subject is complex and includes, without limitation, regulations issued by the U.S. Customs and Border Protection, the U.S. Department of Commerce's Bureau of Industry and Security, the U.S. Treasury Department's Office of Foreign Assets Control and various foreign governmental agencies, including applicable export controls, customs, currency exchange control and transfer pricing regulations, as applicable. No assurances can be made that we will continue to be found to be operating in compliance with, or be able to detect violations of, any such laws or regulations. In addition, we cannot predict the nature, scope or effect of future regulatory requirements to which our international operations might be subject or the manner in which existing laws might be administered or interpreted.

There may be uncertainty as to the position the U.S. will take with respect to world affairs and events following the 2016 U.S. presidential election and related change in the U.S. political agenda. This uncertainty may relate to such issues as the administration’s support or plans for new or existing treaty and trade relationships with other countries, such as the January 2017 U.S. withdrawal from the Trans-Pacific Partnership, which may affect restrictions or tariffs imposed on products we buy or sell. These factors, together with other key global events during 2017 (such as the continuing uncertainty arising from the

Brexit transition, as well as ongoing terrorist activity), may adversely impact the ability or willingness of non-U.S. companies to transact business in the U.S. This uncertainty may also affect regulations and trade agreements affecting U.S. companies, global stock markets (including the NYSE, on which our common shares are traded), currency exchange rates, and general global economic conditions. All of these factors are outside of our control, but may nonetheless cause us to adjust our strategy in order to compete effectively in global markets.

In addition, the Company is currently analyzing the impact of the December 2017 passage of the Tax Cuts and Jobs Act of 2017 (the “Act”) in the United States, which significantly changed U.S. tax law and affects, among other items, the company’s U.S. federal income tax rate, previously unremitted foreign earnings and valuations of deferred tax assets and liabilities. The Company included reasonable estimates of the income tax effects in applying the provisions of the Act in accordance with Accounting Standards Codification Topic 740, Income Taxes (ASC Topic 740) and following the guidance in SEC Staff Accounting Bulletin No. 118 (“SAB 118”). The impacts from the Act may differ, primarily related to deemed repatriated earnings and associated withholding taxes, from these provisional amounts, possibly materially, due to, among other things, additional analysis, changes from interpretations enacted and assumptions the Company has made, additional regulatory guidance that may be issued, and actions the Company may take as a result of the Act. As a result, this (and other) tax legislation could adversely affect our financial condition, results of operations and cash flows.

Our international operations expose us to fluctuations in foreign currency exchange rates.

A significant portion of our revenue and certain of our costs, assets and liabilities, are denominated in currencies other than the U.S. dollar. The primary currencies to which we have exposure are the Euro, British pound, Mexican peso, Brazilian real, Indian rupee, Japanese yen, Singapore dollar, Argentine peso, Canadian dollar, Australian dollar, Chinese yuan, Colombian peso, Chilean peso and South African rand. Certain of the foreign currencies to which we have exposure, such as the Venezuelan bolivar and Argentine peso, have undergone significant devaluation in the past, which can reduce the value of our local monetary assets, reduce the U.S. dollar value of our local cash flow, generate local currency losses that may impact our ability to pay future dividends from our subsidiary to the parent company and potentially reduce the U.S. dollar value of future local net income. Although we enter into forward exchange contracts to economically hedge some of our risks associated with transactions denominated in certain foreign currencies, no assurances can be made that exchange rate fluctuations will not adversely affect our financial condition, results of operations and cash flows.

We could be adversely affected by violations of the U.S. Foreign Corrupt Practices Act and similar worldwide anti-bribery laws and regulations.

The U.S. Foreign Corrupt Practices Act ("FCPA") and similar anti-bribery laws and regulations in other jurisdictions, such as the UK Bribery Act, generally prohibit companies and their intermediaries from making improper payments to government officials for the purpose of obtaining or retaining business or securing an improper advantage. Because we operate in many parts of the world and sell to industries that have experienced corruption to some degree, our policies mandate compliance with applicable anti-bribery laws worldwide. If we are found to be in violation of the FCPA or other similar anti-bribery laws or regulations, whether due to our or others' actions or inadvertence, we could be subject to civil and criminal penalties or other sanctions that could have a material adverse impact on our business, financial condition, results of operations and cash flows. In addition, actual or alleged violations could damage our reputation or ability to do business.

Terrorist acts, conflicts and wars may materially adversely affect our business, financial condition and results of operations and may adversely affect the market for our common stock.

As a global company with a large international footprint, we are subject to increased risk of damage or disruption to us, our employees, facilities, partners, suppliers, distributors, resellers or customers due to terrorist acts, conflicts and wars, wherever located around the world. The potential for future attacks, the national and international responses to attacks or perceived threats to national security, and other actual or potential conflicts or wars, such as the Israeli-Hamas conflict and ongoing instability in Syria and Egypt, have created many economic and political uncertainties. In addition, as a global company with headquarters and significant operations located in the U.S., actions against or by the U.S. may impact our business or employees. Although it is impossible to predict the occurrences or consequences of any such events, they could result in a decrease in demand for our products, make it difficult or impossible to deliver products to our customers or to receive components from our suppliers, create delays and inefficiencies in our supply chain and pose risks to our employees, resulting in the need to impose travel restrictions, any of which could adversely affect our business, financial condition, results of operations and cash flows.

Environmental compliance costs and liabilities could adversely affect our financial condition, results of operations and cash flows.

Our operations and properties are subject to regulation under environmental laws, which can impose substantial sanctions for violations. We must conform our operations to applicable regulatory requirements and adapt to changes in such requirements in all countries in which we operate.

We use hazardous substances and generate hazardous wastes in many of our manufacturing and foundry operations. Most of our current and former properties are or have been used for industrial purposes, and some may require clean-up of historical contamination. We are currently conducting investigation and/or remediation activities at a number of locations where we have known environmental concerns. In addition, we have been identified as one of many PRPs at five Superfund sites. The projected cost of remediation at these sites, as well as our alleged "fair share" allocation, while not anticipated to be material, has been reserved. However, until all studies have been completed and the parties have either negotiated an amicable resolution or the matter has been judicially resolved, some degree of uncertainty remains.

We have incurred, and expect to continue to incur, operating and capital costs to comply with environmental requirements. In addition, new laws and regulations, stricter enforcement of existing requirements, the discovery of previously unknown contamination or the imposition of new clean-up requirements could require us to incur costs or become the basis for new or increased liabilities. Moreover, environmental and sustainability initiatives, practices, rules and regulations are under increasing scrutiny of both governmental and non-governmental bodies, which can cause rapid change in operational practices, standards and expectations and, in turn, increase our compliance costs. Any of these factors could have a material adverse effect on our financial condition, results of operations and cash flows.

We are exposed to certain regulatory and financial risks related to climate change which could adversely affect our financial condition, results of operations and cash flows.

Climate change is receiving ever increasing attention worldwide. Many scientists, legislators and others attribute global warming to increased levels of greenhouse gases, including carbon dioxide, which has led to significant legislative and regulatory efforts to limit greenhouse gas emissions. The U.S. Congress, state and foreign legislatures and federal, state, local and foreign governmental agencies have been considering legislation and regulatory proposals that would regulate and limit greenhouse gas emissions. It is uncertain whether, when and in what form mandatory carbon dioxide emissions reduction program may be adopted. Similarly, certain countries have adopted the Kyoto Protocol and/or the Paris Climate Agreement and these and other existing international initiatives or those under consideration could affect our international operations. To the extent our customers, particularly those involved in the oil and gas, power generation, petrochemical processing or petroleum refining industries, are subject to any of these or other similar proposed or newly enacted laws and regulations, we are exposed to risks that the additional costs by customers to comply with such laws and regulations could impact their ability or desire to continue to operate at similar levels in certain jurisdictions as historically seen or as currently anticipated, which could negatively impact their demand for our products and services. In addition, new laws and regulations that might favor the increased use of non-fossil fuels, including nuclear, wind, solar and bio-fuels or that are designed to increase energy efficiency, could dampen demand for oil and gas production or power generation resulting in lower spending by customers for our products and services. These actions could also increase costs associated with our operations, including costs for raw materials and transportation. Because it is uncertain what laws will be enacted, we cannot predict the potential impact of such laws on our future financial condition, results of operations and cash flows.

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

We are a defendant in a substantial number of lawsuits that seek to recover damages for personal injury allegedly resulting from exposure to asbestos-containing products formerly manufactured and/or distributed by us. Such products were used as internal components of process equipment, and we do not believe that there was any significant emission of asbestos-containing fibers during the use of this equipment. Although we are defending these allegations vigorously and believe that a high percentage of these lawsuits are covered by insurance or indemnities from other companies, there can be no assurance that we will prevail or that coverage or payments made by insurance or such other companies would be adequate. Unfavorable rulings, judgments or settlement terms could have a material adverse impact on our business, financial condition, results of operations and cash flows.

Our business may be adversely impacted by work stoppages and other labor matters.

As of December 31, 2017, we had approximately 17,000 employees, of which approximately 5,000 were located in the U.S. Approximately 5% of our U.S. employees are represented by unions. We also have unionized employees or employee work councils in Argentina, Australia, Austria, Brazil, Finland, France, Germany, India, Italy, Japan, Mexico, The Netherlands, Spain, South Africa, Sweden and the U.K. No individual unionized facility produces more than 10% of our revenues. Although we believe that our relations with our employees are generally satisfactory and we have not experienced any material strikes or work stoppages recently, no assurances can be made that we will not in the future experience these and other types of conflicts with labor unions, works councils, other groups representing employees or our employees generally, or that any future negotiations with our labor unions will not result in significant increases in our cost of labor.

Our ability to implement our business strategy and serve our customers is dependent upon the continuing ability to employ talented professionals and attract, train, develop and retain a skilled workforce. We are subject to the risk that we will not be able to effectively replace the knowledge and expertise of an aging workforce as workers retire. Without a properly skilled and experienced workforce, our costs, including productivity costs and costs to replace employees may increase, and this could negatively impact our earnings.

We depend on key personnel, the loss of whom would harm our business.

Our future success will depend in part on the continued service of key executive officers and personnel. The loss of the services of any key individual could harm our business. Our future success also depends on our ability to recruit, retain and engage our personnel sufficiently, both to maintain our current business and to execute our strategic initiatives. Competition for officers and employees in our industry is intense and we may not be successful in attracting and retaining such personnel.

Inability to protect our intellectual property could negatively affect our competitive position.

We rely on a combination of patents, copyrights, trademarks, trade secrets, confidentiality provisions and licensing arrangements to establish and protect our proprietary rights. We cannot guarantee, however, that the steps we have taken to protect our intellectual property will be adequate to prevent infringement of our rights or misappropriation of our technology. For example, effective patent, trademark, copyright and trade secret protection may be unavailable or limited in some of the foreign countries in which we operate. In addition, while we generally enter into confidentiality agreements with our employees and third parties to protect our intellectual property, such confidentiality agreements could be breached or otherwise may not provide meaningful protection for our trade secrets and know-how related to the design, manufacture or operation of our products. If it became necessary for us to resort to litigation to protect our intellectual property rights, any proceedings could be burdensome and costly, and we may not prevail. Further, adequate remedies may not be available in the event of an unauthorized use or disclosure of our trade secrets and manufacturing expertise. If we fail to successfully enforce our intellectual property rights, our competitive position could suffer, which could harm our business, financial condition, results of operations and cash flows.

Significant changes in pension fund investment performance or assumptions changes may have a material effect on the valuation of our obligations under our defined benefit pension plans, the funded status of these plans and our pension expense.

We maintain defined benefit pension plans that are required to be funded in the U.S., Belgium, Canada, India, Mexico, The Netherlands, Switzerland and the U.K., and defined benefit plans that are not required to be funded in Austria, France, Germany, Italy, Japan and Sweden. Our pension liability is materially affected by the discount rate used to measure our pension obligations and, in the case of the plans that are required to be funded, the level of plan assets available to fund those obligations and the expected long-term rate of return on plan assets. A change in the discount rate can result in a significant increase or decrease in the valuation of pension obligations, affecting the reported status of our pension plans and our pension expense. Significant changes in investment performance or a change in the portfolio mix of invested assets can result in increases and decreases in the valuation of plan assets or in a change of the expected rate of return on plan assets. This impact may be particularly prevalent where we maintain significant concentrations of specified investments, such as the U.K. equity and fixed income securities in our non-U.S. defined benefit plans. Changes in the expected return on plan assets assumption can result in significant changes in our pension expense and future funding requirements.

We continually review our funding policy related to our U.S. pension plan in accordance with applicable laws and regulations. U.S. regulations have increased the minimum level of funding for U.S pension plans in prior years, which has at times required significant contributions to our pension plans. Contributions to our pension plans reduce the availability of our cash flows to fund working capital, capital expenditures, R&D efforts and other general corporate purposes.

We may incur material costs as a result of product liability and warranty claims, which could adversely affect our financial condition, results of operations and cash flows.

We may be exposed to product liability and warranty claims in the event that the use of one of our products results in, or is alleged to result in, bodily injury and/or property damage or our products actually or allegedly fail to perform as expected. Some of our products are designed to support the most critical, severe service applications in the markets that we serve and any failure of such products could result in significant product liability and warranty claims, as well as damage to our reputation in the marketplace. While we maintain insurance coverage with respect to certain product liability claims, we may not be able to obtain such insurance on acceptable terms in the future, and any such insurance may not provide adequate coverage against product liability claims. In addition, product liability claims can be expensive to defend and can divert the attention of management and other personnel for significant periods of time, regardless of the ultimate outcome. An unsuccessful defense of a product liability claim could have an adverse effect on our business, financial condition, results of operations and cash flows. Even if we are successful in defending against a claim relating to our products, claims of this nature could cause our customers to lose confidence in our products and our company. Warranty claims are not generally covered by insurance, and we may incur significant warranty costs in the future for which we would not be reimbursed.

The recording of increased deferred tax asset valuation allowances in the future or the impact of tax law changes on such deferred tax assets could affect our operating results.

We currently have significant net deferred tax assets resulting from tax credit carryforwards, net operating losses and other deductible temporary differences that are available to reduce taxable income in future periods. Based on our assessment of our deferred tax assets, we determined, based on projected future income and certain available tax planning strategies, that approximately $134 million of our deferred tax assets will more likely than not be realized in the future, and no valuation allowance is currently required for this portion of our deferred tax assets. Should we determine in the future that these assets will not be realized we will be required to record an additional valuation allowance in connection with these deferred tax assets and our operating results would be adversely affected in the period such determination is made. In addition, tax law changes could negatively impact our deferred tax assets.

Our outstanding indebtedness and the restrictive covenants in the agreements governing our indebtedness limit our operating and financial flexibility.

We are required to make scheduled repayments and, under certain events of default, mandatory repayments on our outstanding indebtedness, which may require us to dedicate a substantial portion of our cash flows from operations to payments on our indebtedness, thereby reducing the availability of our cash flows to fund working capital, capital expenditures, R&D efforts and other general corporate purposes, such as dividend payments and share repurchases, and could generally limit our flexibility in planning for, or reacting to, changes in our business and industry.

In addition, the agreements governing our indebtedness impose certain operating and financial restrictions on us and somewhat limit management's discretion in operating our businesses. These agreements limit or restrict our ability, among other things, to: incur additional debt; fully utilize the capacity under the Senior Credit Facility; pay dividends and make other distributions; prepay subordinated debt; make investments and other restricted payments; create liens; sell assets; and enter into transactions with affiliates.

We are also required to maintain certain debt ratings, comply with leverage and interest coverage financial covenants and deliver to our lenders audited annual and unaudited quarterly financial statements. Our ability to comply with these covenants may be affected by events beyond our control. Failure to comply with these covenants could result in an event of default which, if not cured or waived, may have a material adverse effect on our business, financial condition, results of operations and cash flows.

We may not be able to continue to expand our market presence through acquisitions, and any future acquisitions may present unforeseen integration difficulties or costs.

Since 1997, we have expanded through a number of acquisitions, and we may pursue strategic acquisitions of businesses in the future. Our ability to implement this growth strategy will be limited by our ability to identify appropriate acquisition candidates, covenants in our credit agreement and other debt agreements and our financial resources, including available cash and borrowing capacity. Acquisitions may require additional debt financing, resulting in higher leverage and an increase in interest expense. In addition, acquisitions may require large one-time charges and can result in the incurrence of contingent liabilities, adverse tax consequences, substantial depreciation or deferred compensation charges, the amortization of identifiable purchased intangible assets or impairment of goodwill, any of which could have a material adverse effect on our business, financial condition, results of operations and cash flows.

Should we acquire another business, the process of integrating acquired operations into our existing operations may create operating difficulties and may require significant financial and managerial resources that would otherwise be available for the ongoing development or expansion of existing operations. Some of the more common challenges associated with acquisitions that we may experience include:

- loss of key employees or customers of the acquired company;
- conforming the acquired company's standards, processes, procedures and controls, including accounting systems and controls, with our operations, which could cause deficiencies related to our internal control over financial reporting;
- coordinating operations that are increased in scope, geographic diversity and complexity;
- retooling and reprogramming of equipment;
- hiring additional management and other critical personnel; and
- the diversion of management's attention from our day-to-day operations.

Further, no guarantees can be made that we would realize the cost savings, synergies or revenue enhancements that we may anticipate from any acquisition, or that we will realize such benefits within the time frame that we expect. If we are not able to timely address the challenges associated with acquisitions and successfully integrate acquired businesses, or if our integrated product and service offerings fail to achieve market acceptance, our business could be adversely affected.

Goodwill impairment could negatively impact our net income and stockholders' equity.

Goodwill is not amortized, but is tested for impairment at the reporting unit level, which is an operating segment or one level below an operating segment. Goodwill is required to be tested for impairment annually and between annual tests if events or circumstances indicate that it is more likely than not that the fair value of a reporting unit is less than its carrying value. Reductions in or impairment of the value of our goodwill or other intangible assets will result in charges against our earnings, which could have a material adverse effect on our reported results of operations and financial position in future periods.

There are numerous risks that may cause the fair value of a reporting unit to fall below its carrying amount, which could lead to the measurement and recognition of goodwill impairment. These risks include, but are not limited to, lowered expectations of future financial results, adverse changes in the business climate, increase in the discount rate, an adverse action or assessment by a regulator, the loss of key personnel, a more-likely-than-not expectation that all or a significant portion of a reporting unit may be disposed of, failure to realize anticipated synergies from acquisitions, a sustained decline in the Company’s market capitalization, and significant, prolonged negative variances between actual and expected financial results. In recent years, the estimated fair value of EPO and IPD have fluctuated, partially due to broad-based capital spending declines and heightened pricing pressures experienced in the oil and gas markets. Although we have concluded that there is no impairment on the goodwill associated with our EPO and IPD reporting units as of December 31, 2017, we will continue to monitor their performance and related market conditions for future indicators of potential impairment. For additional information, see the discussion in Item 7 of this Annual Report and under Note 1 to our consolidated financial statements included in Item 8 of this Annual Report.

Cybersecurity threats could disrupt our business and result in the loss of critical and confidential information.

Our information technology networks and related systems and devices are critical to the operation of our business and essential to our ability to successfully perform day-to-day operations. Cybersecurity breaches could expose us to a risk of loss, misuse, or interruption of sensitive and critical information and functions, including our proprietary information and information related to our customers, suppliers and employees. While we devote substantial resources to maintaining adequate levels of cybersecurity, there can be no assurance that we will be able to prevent all of the rapidly evolving forms of increasingly sophisticated and frequent cyberattacks. The potential consequences of a material cybersecurity incident include reputational damage, litigation with third parties, regulatory actions, theft of intellectual property, and increased cybersecurity protection and remediation costs. If we are unable to prevent, detect or adequately respond to security breaches, our operations could be disrupted and our business could be materially and adversely affected.

If we are not able to successfully execute and realize the expected financial benefits from our strategic realignment and other cost-saving initiatives, our business could be adversely affected.

In April 2015, we announced cost saving actions and a strategic manufacturing optimization initiative intended to reduce our cost structure and drive an optimized, low-cost manufacturing footprint. This initiative was expanded throughout 2016 and again in the first half of 2017 to include additional realignment activities that will continue beyond 2017. This initiative will involve reducing our workforce, accelerating structural changes in our global manufacturing footprint through leveraging investments in low-cost regions, additional consolidation of product manufacturing and further SG&A reductions.

While we expect significant financial benefits from our strategic realignment, we may not realize the full benefits that we currently expect within the anticipated time frame or at all. Adverse effects from our execution of realignment activities could interfere with our realization of anticipated synergies, customer service improvements and cost savings from these strategic initiatives. Additionally, our ability to fully realize the benefits and implement the realignment program may be limited by the terms of our credit facilities and other contractual commitments. Moreover, because such expenses are difficult to predict and are necessarily inexact, we may incur substantial expenses in connection with the execution of our realignment plans in excess of what is currently forecast. Further, realignment activities are a complex and time-consuming process that can place substantial demands on management, which could divert attention from other business priorities or disrupt our daily operations. Any of these failures could, in turn, materially adversely affect our business, financial condition, results of operations and cash flows, which could constrain our liquidity.

If these measures are not successful or sustainable, we may undertake additional realignment and cost reduction efforts, which could result in future charges. Moreover, our ability to achieve our other strategic goals and business plans may be adversely affected, and we could experience business disruptions with customers and elsewhere if our realignment efforts prove ineffective.

Ineffective internal controls could impact the accuracy and timely reporting of our business and financial results.

Our internal control over financial reporting may not prevent or detect misstatements because of its inherent limitations, including the possibility of human error, the circumvention or overriding of controls, or fraud. Even effective internal controls can provide only reasonable assurance with respect to the preparation and fair presentation of financial statements. If we fail to maintain the adequacy of our internal controls, including any failure to implement required new or improved controls, or if we experience difficulties in their implementation, our business and financial results could be harmed and we could fail to meet our financial reporting obligations. For example, during its evaluation of the effectiveness of our internal control over financial reporting as of December 31, 2016, management concluded that a deficiency in our internal controls related to the control environment primarily related to the operation of certain inventory controls or recording of unsupported manual journal entries at one of the non-U.S. sites and the design and maintenance of effective business performance reviews represented material weaknesses in our internal control over financial reporting and, therefore, that we did not maintain effective internal control over financial reporting as of December 31, 2016. Management actively engaged in the planning and implementation of remediation efforts to address these material weaknesses and to strengthen the overall internal control related to the control environment at the one non-U.S. site and the business review controls and believes that such remediation efforts have effectively remediated the material weaknesses. For further description of the prior material weaknesses identified by management and the remediation efforts implemented for the material weaknesses, see “Part II, Item 9A - Controls and Procedures.”

Forward-Looking Information is Subject to Risk and Uncertainty

This Annual Report and other written reports and oral statements we make from time-to-time include “forward-looking statements” within the meaning of Section 27A of the Securities Act of 1933, Section 21E of the Securities Exchange Act of 1934 and the Private Securities Litigation Reform Act of 1995. All statements other than statements of historical facts included in this Annual Report regarding our financial position, business strategy, plans and objectives of management for future operations, industry conditions, market conditions and indebtedness covenant compliance are forward-looking statements. In some cases forward looking statements can be identified by terms such as "may," "should," "expects," "could," "intends," "projects," "predicts," "plans," "anticipates," "estimates," "believes," "forecasts" or other comparable terminology. These statements are not historical facts or guarantees of future performance, but instead are based on current expectations and are subject to significant risks, uncertainties and other factors, many of which are outside of our control.

We have identified factors that could cause actual plans or results to differ materially from those included in any forward-looking statements. These factors include those described above under this "Risk Factors" heading, or as may be identified in our other SEC filings from time to time. These uncertainties are beyond our ability to control, and in many cases, it is not possible to foresee or identify all the factors that may affect our future performance or any forward-looking information, and new risk factors can emerge from time to time. Given these risks and uncertainties, undue reliance should not be placed on forward-looking statements as a prediction of actual results.

All forward-looking statements included in this Annual Report are based on information available to us on the date of this Annual Report and the risk that actual results will differ materially from expectations expressed in this report will increase with the passage of time. We undertake no obligation, and disclaim any duty, to publicly update or revise any forward-looking statement or disclose any facts, events or circumstances that occur after the date hereof that may affect the accuracy of any forward-looking statement, whether as a result of new information, future events, changes in our expectations or otherwise. This discussion is provided as permitted by the Private Securities Litigation Reform Act of 1995 and all of our forward-looking statements are expressly qualified in their entirety by the cautionary statements contained or referenced in this section.

ITEM 1B. *UNRESOLVED STAFF COMMENTS*

None.

ITEM 2. *PROPERTIES*

Our principal executive offices, including our global headquarters, are located at 5215 N. O'Connor Boulevard, Suite 2300, Irving, Texas 75039. Our global headquarters is a leased facility, which we began to occupy on January 1, 2004. In September 2011, we extended our original lease term an additional 10 years to December 31, 2023. We have the option to renew the current lease for two additional five-year periods. We currently occupy 125,000 square feet at this facility.

Our major manufacturing facilities (those with 50,000 or more square feet of manufacturing capacity) operating at December 31, 2017 are presented in the table below. See "Item 1. Business" in this Annual Report for further information with respect to all of our manufacturing and operational facilities, including QRCs.

	Number of Facilities	Approximate Square Footage
EPD		
U.S.	3	600,000
Non-U.S.	15	2,709,000
IPD		
U.S.	4	593,000
Non-U.S.	9	2,381,000
FCD		
U.S.	5	1,129,000
Non-U.S.	11	1,627,000

We own the majority of our manufacturing facilities, and those manufacturing facilities we do not own are leased. We also maintain a substantial network of U.S. and foreign service centers and sales offices, most of which are leased. The majority of our manufacturing leased facilities are covered by lease agreements with terms ranging from two to seven years, with individual lease terms generally varying based on the facilities’ primary usage. We believe we will be able to extend leases on our various facilities as necessary, as they expire.

We believe that our current facilities are adequate to meet the requirements of our present and foreseeable future operations. We continue to review our capacity requirements as part of our strategy to optimize our global manufacturing efficiency. See Note 10 to our consolidated financial statements included in Item 8 of this Annual Report for additional information regarding our operating lease obligations.

ITEM 3. *LEGAL PROCEEDINGS*

We are party to the legal proceedings that are described in Note 12 to our consolidated financial statements included in Item 8 of this Annual Report, and such disclosure is incorporated by reference into this Item 3. In addition to the foregoing, we and our subsidiaries are named defendants in certain other routine lawsuits incidental to our business and are involved from time to time as parties to governmental proceedings, all arising in the ordinary course of business. Although the outcome of lawsuits or other proceedings involving us and our subsidiaries cannot be predicted with certainty, and the amount of any liability that could arise with respect to such lawsuits or other proceedings cannot be predicted accurately, management does not currently expect these matters, either individually or in the aggregate, to have a material effect on our financial position, results of operations or cash flows. We have established reserves covering exposures relating to contingencies to the extent believed to be reasonably estimable and probable based on past experience and available facts.

ITEM 4. *MINE SAFETY DISCLOSURES*

Not applicable.

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

Market Information and Dividends

Our common stock is traded on the New York Stock Exchange ("NYSE") under the symbol "FLS." On February 21, 2018, our records showed 1,058 shareholders of record. The following table sets forth the range of high and low prices per share of our common stock as reported by the NYSE for the periods indicated.

PRICE RANGE OF FLOWSERVE COMMON STOCK
(Intraday High/Low Prices)

	2017	2016
First Quarter	$51.85/$45.22	$47.21/$35.40
Second Quarter	51.14/44.04	52.32/42.10
Third Quarter	47.25/37.58	49.45/44.17
Fourth Quarter	45.38/38.63	51.72/41.35

The table below presents declaration, record and payment dates, as well as the per share amounts, of dividends on our common stock during 2017 and 2016:

Declaration Date	Record Date	Payment Date	Dividend Per Share
December 21, 2017	January 5, 2018	January 19, 2018	$0.19
September 5, 2017	September 22, 2017	October 6, 2017	0.19
May 18, 2017	June 23, 2017	July 7, 2017	0.19
February 16, 2017	March 24, 2017	April 7, 2017	0.19

Declaration Date	Record Date	Payment Date	Dividend Per Share
December 23, 2016	January 3, 2017	January 13, 2017	$0.19
August 29, 2016	September 30, 2016	October 14, 2016	0.19
May 19, 2016	June 24, 2016	July 8, 2016	0.19
February 18, 2016	March 25, 2016	April 8, 2016	0.19

On February 15, 2016, our Board of Directors authorized an increase in the payment of quarterly dividends on our common stock from $0.18 per share to $0.19 per share payable beginning on April 8, 2016. On February 17, 2015, our Board of Directors authorized an increase in the payment of quarterly dividends on our common stock from $0.16 per share to $0.18 per share payable beginning on April 10, 2015. Any subsequent dividends will be reviewed by our Board of Directors on a quarterly basis and declared at its discretion dependent on its assessment of our financial situation and business outlook at the applicable time. Our credit facilities contain covenants that could restrict our ability to declare and pay dividends on our common stock. See the discussion of our credit facilities under Item 7 of this Annual Report and in Note 10 to our consolidated financial statements included in Item 8 of this Annual Report.

Issuer Purchases of Equity Securities

Note 14 to our consolidated financial statements included in Item 8 of this Annual Report includes a discussion of our share repurchase activity and payment of quarterly dividends on our common stock.

During the quarter ended December 31, 2017, we had no repurchases of common shares. As of December 31, 2017, we have $160.7 million of remaining capacity under our current share repurchase program. The following table sets forth the repurchase data for each of the three months during the quarter ended December 31, 2017:

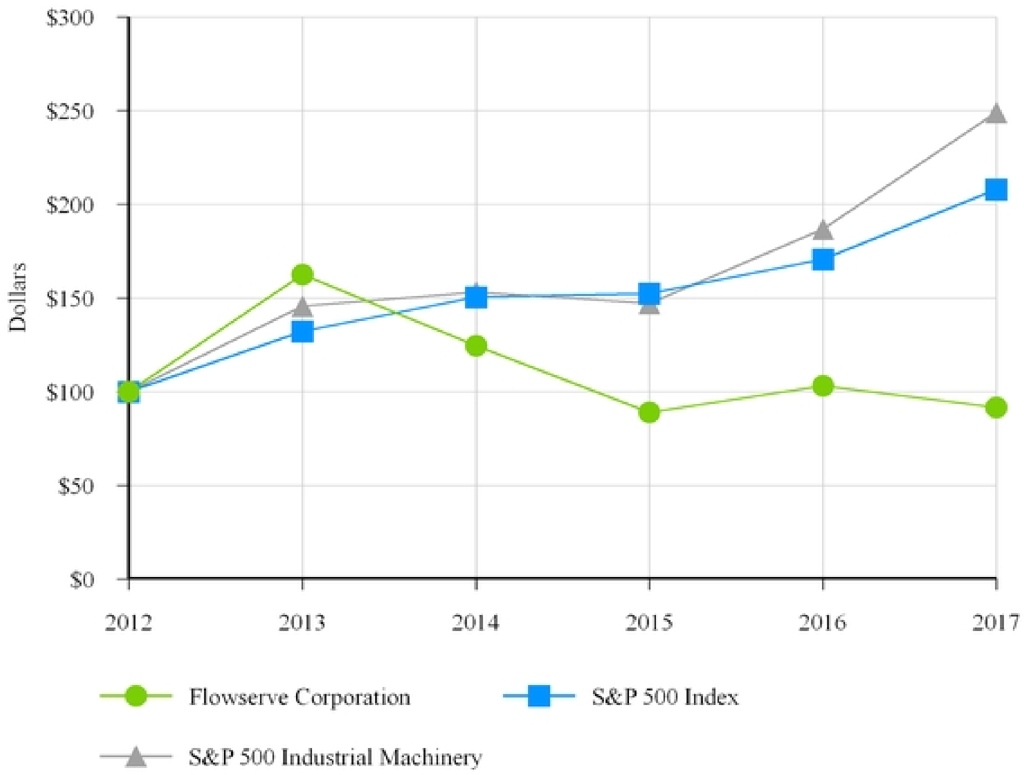
Period	Total Number of Shares Purchased		Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Plan	Maximum Number of Shares (or Approximate Dollar Value) That May Yet Be Purchased Under the Plan
					(In millions)
October 1 - 31	—		$ —	—	$ 160.7
November 1 - 30	129	(1)	39.10	—	160.7
December 1 - 31	27,057	(2)	42.16	—	160.7
Total	27,186		$ 42.15	—	

(1) Shares tendered by employees to satisfy minimum tax withholding amounts for Restricted Shares.

(2) Represents 24,756 shares that were tendered by employees to satisfy minimum tax withholding amounts for Restricted Shares at an average price per share of $42.13, and 2,301 shares purchased at a price of $42.54 per share by a rabbi trust that we established in connection with our director deferral plans, pursuant to which non-employee directors may elect to defer directors' quarterly cash compensation to be paid at a later date in the form of common stock.

Stock Performance Graph

The following graph depicts the most recent five-year performance of our common stock with the S&P 500 Index and S&P 500 Industrial Machinery. The graph assumes an investment of $100 on December 31, 2012, and assumes the reinvestment of any dividends over the following five years. The stock price performance shown in the graph is not necessarily indicative of future price performance.



	Base Period	December 31,				
Company/Index	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Flowserve Corporation	$100.00	$162.59	$124.52	$88.93	$103.17	$91.64
S&P 500 Index	100.00	132.38	150.49	152.55	170.79	208.06
S&P 500 Industrial Machinery	100.00	145.81	153.17	147.11	186.74	249.23

ITEM 6. *SELECTED FINANCIAL DATA*

	Year Ended December 31,				
	2017(a)	2016(b)	2015(c)	2014 (d)	2013
	(Amounts in thousands, except per share data and ratios)				
RESULTS OF OPERATIONS					
Sales	$ 3,660,831	$ 3,990,487	$ 4,557,791	$ 4,877,885	$ 4,954,619
Gross profit	1,085,377	1,231,233	1,477,537	1,710,171	1,686,379
Selling, general and administrative expense	(903,864)	(968,530)	(972,733)	(936,900)	(966,830)
Gain (loss) on sale of businesses	141,317	(7,664)	—	—	—
Operating income	335,422	267,965	514,665	785,386	758,566
Interest expense	(59,730)	(60,137)	(65,270)	(60,322)	(54,413)
Provision for income taxes(e)	(258,679)	(77,380)	(148,351)	(209,311)	(204,862)
Net earnings attributable to Flowserve Corporation	2,652	132,455	258,411	513,372	483,652
Net earnings per share of Flowserve Corporation common shareholders (basic)	0.02	1.02	1.94	3.75	3.42
Net earnings per share of Flowserve Corporation common shareholders (diluted)	0.02	1.01	1.93	3.72	3.40
Cash flows from operating activities	311,066	240,476	440,759	594,481	515,724
Cash dividends declared per share	0.76	0.76	0.72	0.64	0.56
FINANCIAL CONDITION					
Working capital	$ 1,315,837	$ 1,119,251	$ 1,106,946	$ 1,164,381	$ 1,136,317
Total assets	4,910,474	4,708,923	4,963,106	4,844,667	4,921,829
Total debt	1,575,257	1,570,623	1,620,996	1,145,658	1,190,231
Retirement obligations and other liabilities	496,954	407,839	387,786	362,970	387,823
Total equity	1,670,954	1,637,388	1,664,382	1,930,246	1,870,669
FINANCIAL RATIOS					
Return on average net assets(f)	0.2%	5.2%	9.4%	17.9%	16.9%
Net debt to net capital ratio(g)	34.3%	42.4%	43.0%	26.4%	30.6%

(a) Results of operations in 2017 include costs of $71.3 million resulting from realignment initiatives, resulting in a reduction of after tax net earnings of $54.3 million.

(b) Results of operations in 2016 include costs of $94.8 million resulting from realignment initiatives, resulting in a reduction of after tax net earnings of $75.8 million.

(c) Results of operations in 2015 include costs of $108.1 million resulting from realignment initiatives, resulting in a reduction of after tax net earnings of $85.0 million.

(d) Results of operations in 2014 include costs of $10.7 million resulting from realignment initiatives, resulting in a reduction of after tax net earnings of $7.6 million.

(e) Provision for income taxes in 2017 was impacted by the U.S. Tax Cuts and Jobs Act of 2017. See Note 15 to our consolidated financial statements included in Item 8 of this Annual Report.

(f) Calculated as adjusted net income divided by adjusted net assets, where (i) adjusted net income is the sum of earnings before income taxes, plus interest expense, multiplied by one minus our effective tax rate, and (ii) adjusted net assets is the average of beginning of year and end of year net assets, excluding cash and cash equivalents and debt due in one year.

(g) Calculated as total debt minus cash and cash equivalents divided by the sum of total debt and shareholders' equity minus cash and cash equivalents.

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

The following discussion and analysis is provided to increase the understanding of, and should be read in conjunction with, the accompanying consolidated financial statements and notes. See “Item 1A. Risk Factors” and the “Forward-Looking Statements” included in this Annual Report on Form 10-K for the year ended December 31, 2017 ("Annual Report") for a discussion of the risks, uncertainties and assumptions associated with these statements. Unless otherwise noted, all amounts discussed herein are consolidated.

EXECUTIVE OVERVIEW

Our Company

We believe that we are a world-leading manufacturer and aftermarket service provider of comprehensive flow control systems. We develop and manufacture precision-engineered flow control equipment integral to the movement, control and protection of the flow of materials in our customers’ critical processes. Our product portfolio of pumps, valves, seals, automation and aftermarket services supports global infrastructure industries, including oil and gas, chemical, power generation and water management, as well as general industrial markets where our products and services add value. Through our manufacturing platform and global network of Quick Response Centers ("QRCs"), we offer a broad array of aftermarket equipment services, such as installation, advanced diagnostics, repair and retrofitting. We employ approximately 17,000 employees in more than 50 countries as of December 31, 2017.

Our business model is significantly influenced by the capital spending of global infrastructure industries for the placement of new products into service and maintenance spending for aftermarket services for existing operations. The worldwide installed base of our products is an important source of aftermarket revenue, where products are expected to ensure the maximum operating time of many key industrial processes. Over the past several years, we have significantly invested in our aftermarket strategy to provide local support to drive customer investments in our offerings and use of our services to replace or repair installed products. The aftermarket portion of our business also helps provide business stability during various economic periods. The aftermarket business, which is primarily served by our network of 174 QRCs located around the globe, provides a variety of service offerings for our customers including spare parts, service solutions, product life cycle solutions and other value-added services. It is generally a higher margin business compared to our original equipment business and a key component of our profitable growth strategy.

Our operations are conducted through three business segments that are referenced throughout this Management’s Discussion and Analysis of Financial Condition and Results of Operations ("MD&A"):

- EPD for long lead time, custom and other highly-engineered pumps and pump systems, mechanical seals, auxiliary systems and replacement parts and related services;
- IPD for engineered and pre-configured industrial pumps and pump systems and related products and services; and
- FCD for engineered and industrial valves, control valves, actuators and controls and related services.

Our business segments share a focus on industrial flow control technology and have a high number of common customers. These segments also have complementary product offerings and technologies that are often combined in applications that provide us a net competitive advantage. Our segments also benefit from our global footprint, our economies of scale in reducing administrative and overhead costs to serve customers more cost effectively and shared leadership for operational support functions, such as research and development, marketing and supply chain.

The reputation of our product portfolio is built on more than 50 well-respected brand names such as Worthington, IDP, Valtek, Limitorque, Durco, Edward, Anchor/Darling and Durametallic, which we believe to be one of the most comprehensive in the industry. Our products and services are sold either directly or through designated channels to more than 10,000 companies, including some of the world’s leading engineering, procurement and construction ("EPC") firms, original equipment manufacturers, distributors and end users.

We continue to leverage our QRC network to be positioned as near to customers as possible for service and support in order to capture valuable aftermarket business. Along with ensuring that we have the local capability to sell, install and service our equipment in remote regions, it is equally imperative to continuously improve our global operations. We also continue to expand our global supply chain capability to meet global customer demands and ensure the quality and timely delivery of our products. Additionally, we continue to devote resources to improving the supply chain processes across our business segments to find areas of synergy and cost reduction and to improve our supply chain management capability to ensure it can meet global customer demands. We also remain focused on improving on-time delivery and quality, while managing warranty costs as a percentage of sales across our global operations, through the assistance of a focused Continuous Improvement Process ("CIP") initiative. The goal of the CIP initiative, which includes lean manufacturing, six sigma business management strategy and value engineering, is to maximize service fulfillment to customers through on-time delivery, reduced cycle time and quality at the highest internal productivity.

During 2015, 2016 and 2017, we have been challenged by broad-based capital spending declines, originating in the oil and gas industry, heightened pricing pressures and negative currency impacts caused by a stronger U.S. dollar. This has been further compounded by economic and geo-political conditions in Russia, Latin America, the Middle East, North Africa and Asia Pacific.

To better align costs and improve long-term efficiency, we are executing Realignment Programs to accelerate both short- and long-term strategic plans, including targeted manufacturing optimization through the consolidation of facilities, SG&A efficiency initiatives, transfer of activities from high-cost regions to lower-cost facilities and the divestiture of certain non-strategic assets. At the completion of the programs, we expect a 15% to 20% reduction in our global workforce, relative to early 2015 workforce levels. With an expected near-term investment of approximately $360 million, including projects still under final evaluation, we expect the results of our Realignment Programs will deliver annualized run-rate savings of approximately $230 million. Since inception of the Realignment Programs in 2015, we have incurred charges of $294.8 million and we expect to incur most remaining charges in 2018.

In addition, we are focusing on our ongoing low-cost sourcing, including greater use of third-party suppliers and increasing our lower-cost, emerging market capabilities.

Our Markets

The following discussion should be read in conjunction with the "Outlook for 2018" section included below in this MD&A.

Our products and services are used in several distinct industries: oil and gas, chemical, power generation, water management, and several other industries, such as mining, steel and paper, that are collectively referred to as "general industries."

Demand for most of our products depends on the level of new capital investment as well as planned and unplanned maintenance expenditures by our customers. The level of new capital investment depends, in turn, on capital infrastructure projects driven by the need for products that rely on oil and gas, chemicals, power generation and water resource management, as well as general economic conditions. These drivers are generally related to the phase of the business cycle in their respective industries and the expectations of future market behavior. The levels of maintenance expenditures are additionally driven by the reliability of equipment, planned and unplanned downtime for maintenance and the required capacity utilization of the process.

Sales to EPC firms and original equipment manufacturers are typically for large project orders and critical applications, as are certain sales to distributors. Project orders are typically procured for customers either directly from us or indirectly through contractors for new construction projects or facility enhancement projects.

The quick turnaround business, which we also refer to as "short-cycle," is defined as orders that are received from the customer (booked) and shipped generally within six months of receipt. These orders are typically for more standardized, general purpose products, parts or services. Each of our three business segments generate certain levels of this type of business.

In the sale of aftermarket products and services, we benefit from a large installed base of our original equipment, which requires periodic maintenance, repair and replacement parts. We use our manufacturing platform and global network of QRCs to offer a broad array of aftermarket equipment services, such as installation, advanced diagnostics, repair and retrofitting. In geographic regions where we are positioned to provide quick response, we believe customers have traditionally relied on us, rather than our competitors, for aftermarket products due to our highly engineered and customized products. However, the aftermarket for standard products is competitive, as the existence of common standards allows for easier replacement of the installed products. As proximity of service centers, timeliness of delivery and quality are important considerations for all aftermarket products and services, we continue to selectively expand our global QRC capabilities to improve our ability to capture this important aftermarket business.

Oil and Gas

The oil and gas industry represented approximately 38% and 36% of our bookings in 2017 and 2016, respectively. Capital spending in the oil and gas industry decreased in 2017 compared to the previous year due to continued broad-based capital spending declines, heightened pricing pressures and negative currency impacts caused by a stronger U.S. dollar especially during the first half of 2017. Aftermarket opportunities in this industry solidified throughout 2017 due to catch up of deferred spending on our customers' repair and maintenance budgets from previous years.

The outlook for the oil and gas industry is heavily dependent on the demand growth from both mature markets and developing geographies. In the short-term, we believe that an improved oil price outlook will somewhat positively impact oil and gas upstream investment and impact mid-stream and downstream investment to a lesser extent. A recovery in the overall level of spending by oil and gas companies could continue to increase demand for our aftermarket products and services. We believe the medium and long-term fundamentals for this industry remain attractive, and see a stabilized environment as the industry works through current excess supply. In addition, we believe projected depletion rates of existing fields and forecasted long-term demand growth will require additional investments. With our long-standing reputation in providing successful solutions for upstream, mid-stream and downstream applications, along with the advancements in our portfolio of offerings, we believe that we continue to be well-positioned to assist our customers.

Chemical

The chemical industry, which represented approximately 21% of our bookings in both 2017 and 2016, experienced a decreased level of capital spending in 2017 primarily due to broad-based capital spending declines, heightened pricing pressures and negative currency impacts caused by a stronger U.S. dollar especially during the first half of 2017. The aftermarket opportunities solidified throughout 2017 due to catch up of deferred spending of our customers' repair and maintenance budgets from previous years.

The outlook for the chemical industry remains heavily dependent on global economic conditions. As global economies stabilize and unemployment conditions improve, a rise in consumer spending should follow. An increase in spending would drive greater demand for chemical-based products supporting improved levels of capital investment. We believe the chemical industry in the near-term will continue to invest in North America and Middle East capacity additions, maintenance and upgrades for optimization of existing assets and that developing regions will selectively invest in capital infrastructure to meet current and future indigenous demand. We believe our global presence and our localized aftermarket capabilities are well-positioned to serve the potential growth opportunities in this industry.

Power Generation

The power generation industry represented approximately 13% and 14% of our bookings in 2017 and 2016, respectively. In 2017, the power generation industry continued to experience softness in thermal power generation capital spending in the mature and key developing markets. China curtailed the construction of new coal-fired power generation over the last year, while in India and southeast Asia capital investment remained in place driven by increased demand forecasts.

Natural gas-fired combined cycle plants increased its share of the energy mix, driven by market prices for gas remaining low and stable, low capital expenditures, and the ability to stabilize unpredictable renewable sources. With the potential of unconventional sources of gas, the global power generation industry is forecasting an increased use of this form of fuel for power generation plants.

Political efforts to limit the emissions of carbon dioxide may have some adverse effect on thermal power investment plans depending on the potential requirements imposed and the timing of compliance by country. However, we believe that proposed methods of capturing and limiting carbon dioxide emissions offer business opportunities for our products and services. At the same time, we continue to take advantage of new investments in concentrated solar power generating capacity, where our pumps, valves, and seals are uniquely positioned for both molten salt applications as well as the traditional steam cycle.

We believe the long-term fundamentals for the power generation industry remain solid based on projected increases in demand for electricity driven by global population growth, growth of urbanization in developing markets and the increased use of electricity driven transportation. We also believe that our long-standing reputation in the power generation industry, our portfolio of offerings for the various generating methods, our advancements in serving the renewable energy market and carbon capture methodologies, as well as our global service and support structure, position us well for the future opportunities in this important industry.

Water Management

The water management industry represented approximately 4% our bookings in both 2017 and 2016. Water management industry activity levels experienced some softness in 2017 despite worldwide demand for fresh water and water treatment continuing to create requirements for new facilities or for upgrades of existing systems, many of which require products that we offer, particularly pumps. The proportion of people living in regions that find it difficult to meet water requirements is expected to double by 2025. We believe that the persistent demand for fresh water during all economic cycles supports continued investments, especially in North America and developing regions.

General Industries

General industries represented, in the aggregate, approximately 24% and 25% of our bookings in 2017 and 2016, respectively. General industries comprise a variety of different businesses, including mining and ore processing, pharmaceuticals, pulp and paper, food and beverage and other smaller applications, none of which individually represented more than 5% of total bookings in 2017 and 2016. General industries also include sales to distributors, whose end customers operate in the industries we primarily serve.

The outlook for this group of industries is heavily dependent upon the condition of global economies and consumer confidence levels. The long-term fundamentals of many of these industries remain sound, as many of the products produced by these industries are common staples of industrialized and urbanized economies. We believe that our specialty product offerings designed for these industries and our aftermarket service capabilities will provide continued business opportunities.

OUR RESULTS OF OPERATIONS

Throughout this discussion of our results of operations, we discuss the impact of fluctuations in foreign currency exchange rates. We have calculated currency effects on operations by translating current year results on a monthly basis at prior year exchange rates for the same periods.

As previously disclosed in our Quarterly Report on Form 10-Q for the quarterly period ended June 30, 2017, we identified accounting errors focused mainly at two of our non-U.S. sites in the inventory, accounts receivable, cost of sales ("COS") and SG&A balances for prior periods through the first quarter of 2017. We assessed these errors, individually and in the aggregate, and concluded that they were not material to any prior annual or interim period. However, to facilitate comparisons among periods we revised our previously issued audited consolidated financial information which is included in our 2016 Annual Report and unaudited condensed consolidated financial information for the interim periods included in our Form 10-Q/A and Form 10-Q for the quarters ended March 31, 2017 and June 30, 2017, respectively.

Effective July 6, 2017, we sold our FCD Vogt product line and related assets and liabilities to a privately held company. In 2016, sales related to the Vogt business totaled approximately $17 million, with earnings before interest and taxes of approximately $4 million.

Effective May 2, 2017 we sold our FCD Gestra AG business to a leading provider of steam system solutions. In 2016, Gestra recorded sales of approximately $101 million (€92 million) with earnings before interest and taxes of approximately $17 million (€15 million).

Note 2 to our consolidated financial statements included in Item 8 of this Annual Report discusses the details of the above dispositions.

In 2015, we initiated Realignment Programs that consist of both restructuring and non-restructuring charges that are further discussed in Note 16 to our consolidated financial statements included in Item 8 of this Annual Report. The Realignment Programs will continue to be executed into 2018 and the total charges for Realignment Programs by segment are detailed below for the years ended December 31, 2017 and 2016:

(Amounts in thousands)	December 31, 2017 Engineered Product Division	Industrial Product Division	Flow Control Division	Subtotal–Reportable Segments	Eliminations and All Other	Consolidated Total
Total Realignment Program Charges						
COS	$ 18,364	$ 13,983	$ 11,600	$ 43,947	$ —	$ 43,947
SG&A	7,376	11,311	2,870	21,557	5,751	27,308
Income tax expense	1,000	—	—	1,000	—	1,000
Total	$ 26,740	$ 25,294	$ 14,470	$ 66,504	$ 5,751	$ 72,255

(Amounts in thousands)	December 31, 2016 Engineered Product Division	Industrial Product Division	Flow Control Division	Subtotal–Reportable Segments	Eliminations and All Other	Consolidated Total
Total Realignment Program Charges						
COS	$ 30,642	$ 26,224	$ 8,038	$ 64,904	$ 8	$ 64,912
SG&A	13,804	8,400	3,367	25,571	4,450	30,021
Income tax expense	6,000	2,800	600	9,400	—	9,400
Total	$ 50,446	$ 37,424	$ 12,005	$ 99,875	$ 4,458	$ 104,333

We anticipate a total investment in these Realignment Programs of approximately $360 million, including projects in process or under final evaluation. Since inception of the Realignment Programs in 2015, we have incurred charges of $294.8 million and we expect to incur most remaining charges throughout 2018.

Based on actions under our Realignment Programs, we estimate that we have achieved cost savings of approximately $200 million as of December 31, 2017, as compared with approximately $120 million in the same period of 2016. Approximately $130 million of those savings are in COS with the remainder in SG&A. Upon completion of the Realignment Programs, we expect run-rate cost savings of approximately $230 million, of which the vast majority is expected to be achieved in 2018. Actual savings could vary from expected savings, which represent management's best estimate to date.

Bookings and Backlog

	2017	2016	2015
		(Amounts in millions)	
Bookings	$ 3,803.9	$ 3,760.4	$ 4,176.8
Backlog (at period end)	2,033.4	1,901.8	2,176.4

We define a booking as the receipt of a customer order that contractually engages us to perform activities on behalf of our customer in regards to the manufacture, delivery, and/or support of products or the delivery of service. Bookings recorded and subsequently canceled within the same fiscal period are excluded from bookings. Bookings of $3.8 billion in 2017 increased by $43.5 million, or 1.2%, as compared with 2016. The increase included currency benefits of approximately $27 million. The increase was primarily driven by the oil and gas industry, partially offset by a decrease in the power generation industry. The increase was more heavily weighted towards customer original equipment bookings.

Bookings of $3.8 billion in 2016 decreased by $416.4 million, or 10.0%, as compared with 2015. The decrease included negative currency effects of approximately $108 million. The decrease was primarily driven by the oil and gas industry, and to a lesser extent, the chemical and general industries. The decrease was primarily due to customer original equipment bookings.

Backlog represents the aggregate value of booked but uncompleted customer orders and is influenced primarily by bookings, sales, cancellations and currency effects. Backlog of $2.0 billion at December 31, 2017 increased by $131.6 million, or 6.9%, as compared with December 31, 2016. Currency effects provided an increase of approximately $110 million (currency effects on backlog are calculated using the change in period end exchange rates). Backlog related to aftermarket orders was approximately 31% and 30% of the backlog at December 31, 2017 and 2016, respectively. We expect to ship approximately 92% of December 31, 2017 backlog during 2018.

Backlog of $1.9 billion at December 31, 2016 decreased by $274.6 million, or 12.6%, as compared with December 31, 2015. The decrease included negative currency effects of approximately $18 million (currency effects on backlog are calculated using the change in period end exchange rates). Backlog related to aftermarket orders was approximately 30% and 26% of the backlog at December 31, 2016 and 2015, respectively. We expected to ship approximately 88% of December 31, 2016 backlog during 2017.

Sales

	2017	2016	2015
	(Amounts in millions)		
Sales	$ 3,660.8	$ 3,990.5	$ 4,557.8

Sales in 2017 decreased by $329.7 million, or 8.3%, as compared with 2016. The decrease included currency benefits of approximately $34 million. The decrease was more heavily weighted toward original equipment sales. Sales decreased into every region.

Sales in 2016 decreased by $567.3 million, or 12.4%, as compared with 2015. The decrease included negative currency effects of approximately $115 million. The decrease was more heavily weighted toward original equipment sales. Sales decreased into every region except for sales into the Middle East.

Sales to international customers, including export sales from the U.S., were approximately 64% of total sales in 2017, 64% in 2016 and 66% in 2015. Sales into Europe, the Middle East and Africa ("EMA") were approximately 36%, 35% and 34% of total sales in 2017, 2016 and 2015, respectively. Sales into Asia Pacific were approximately 19% of total sales for 2017, 2016 and 2015. Sales into Latin America were approximately 6% of total sales in 2017, 7% for 2016 and 9% for 2015.

Gross Profit and Gross Profit Margin

	2017	2016	2015
	(Amounts in millions, except percentages)		
Gross profit	$ 1,085.4	$ 1,231.2	$ 1,477.5
Gross profit margin	29.6%	30.9%	32.4%

Gross profit in 2017 decreased by $145.8 million, or 11.8%, as compared with 2016. Gross profit margin in 2017 of 29.6% decreased from 30.9% in 2016. The decrease in gross profit and gross profit margin was primarily attributed to the negative impact of decreased sales on our absorption of fixed manufacturing costs, lower margin projects that shipped from backlog and a $16.9 million charge for costs incurred related to a contract to supply oil and gas platform equipment to an end user in Latin America, partially offset by $10.9 million of charges to write down inventory in Brazil in 2016 that did not recur, a mix shift to higher margin aftermarket sales and lower charges and increased savings related to our Realignment Programs. Aftermarket sales increased to approximately 48% of total sales, as compared with approximately 45% of total sales for the same period in 2016.

Gross profit in 2016 decreased by $246.3 million, or 16.7%, as compared with 2015. Gross profit margin in 2016 of 30.9% decreased from 32.4% in 2015. The decrease in gross profit and gross profit margin was primarily attributed to the negative impact of decreased sales on our absorption of fixed manufacturing costs, unfavorable impacts of short-term operational inefficiencies related to the initial execution of certain Realignment Programs, lower margin projects that shipped from backlog and a charge to write down inventory in Brazil, partially offset by realignment savings achieved related to our Realignment Programs and a mix shift to higher margin aftermarket sales. Aftermarket sales increased to approximately 45% of total sales, as compared with approximately 43% of total sales for the same period in 2015.

SG&A

	2017	2016	2015
	(Amounts in millions, except percentages)		
SG&A	$ 903.9	$ 968.5	$ 972.7
SG&A as a percentage of sales	24.7%	24.3%	21.3%

SG&A in 2017 decreased by $64.6 million, or 6.7%, as compared with 2016. Currency effects yielded an increase of approximately $6 million. SG&A as a percentage of sales in 2017 increased 40 basis points as compared with the same period in 2016 due to a $26.0 million impairment charge related to our manufacturing facility in Brazil, increased accrued broad-based annual incentive compensation and lower sales leverage, partially offset by the $73.5 million reserve established for our primary Venezuelan customer in 2016 that did not recur and savings related to our Realignment Programs.

SG&A in 2016 decreased by $4.2 million, or 0.4%, as compared with 2015. Currency effects yielded a decrease of approximately $28 million. SG&A as a percentage of sales in 2016 increased 300 basis points as compared with the same period in 2015 due primarily to increased bad debt expense as a result of the $73.5 million reserve established for our primary Venezuelan customer in the third quarter of 2016 and lower sales leverage, partially offset by decreased charges and savings achieved related to our Realignment Programs and lower SIHI integration costs.

Gain (Loss) on Sale of Businesses

	2017	2016	2015
	(Amounts in millions)		
Gain (loss) on sale of businesses	$ 141.3	$ (7.7)	$ —

The gain on sale of businesses in 2017 was the result of the $141.3 million pre-tax gain from the sales of the Gestra and Vogt businesses. See Note 2 to our consolidated financial statements included in Item 8 of this Annual Report for additional information on these sales. The $7.7 million loss in 2016 resulted from the sale of a non-strategic foundry business.

Net Earnings from Affiliates

	2017	2016	2015
	(Amounts in millions)		
Net earnings from affiliates	$ 12.6	$ 12.9	$ 9.9

Net earnings from affiliates represents our net income from investments in seven joint ventures (one located in each of Chile, India, Saudi Arabia, South Korea and the United Arab Emirates and two in China) that are accounted for using the equity method of accounting. Net earnings from affiliates in 2017 remained relatively constant compared to the prior year. Net earnings from affiliates in 2016 increased by $3.0 million primarily as a result of increased earnings of our EPD joint venture in South Korea and IPD joint venture in Chile.

Operating Income

	2017	2016	2015
	(Amounts in millions, except percentages)		
Operating income	$ 335.4	$ 268.0	$ 514.7
Operating income as a percentage of sales	9.2%	6.7%	11.3%

Operating income in 2017 increased by $67.4 million, or 25.1%, as compared with 2016. The increase included currency benefits of approximately $2 million. The increase was primarily a result of the $141.3 million pre-tax gain from the sales of the Gestra and Vogt businesses and the $64.6 million decrease in SG&A, partially offset by the $145.8 million decrease in gross profit discussed above.

Operating income in 2016 decreased by $246.7 million, or 47.9%, as compared with 2015. The decrease was primarily a result of the $246.3 million decrease in gross profit and the $7.7 million loss on the sale of a non-strategic foundry business, partially offset by the $4.2 million decrease in SG&A. The decrease included negative currency effects of approximately $12 million.

Interest Expense and Interest Income

	2017	2016	2015
	(Amounts in millions)		
Interest expense	$ (59.7)	$ (60.1)	$ (65.3)
Interest income	3.4	2.8	2.1

Interest expense in 2017 decreased by $0.4 million as compared with 2016. The decrease was primarily attributable to decreased borrowings under our Revolving Credit Facility in 2017, as compared to the same period in 2016. Interest expense in 2016 decreased by $5.2 million as compared with 2015. The decrease was primarily attributable to decreased commitments and borrowings under our Revolving Credit Facility in 2016, as compared to the same period in 2015.

Interest income in 2017 increased by $0.6 million as compared with 2016. Interest income in 2016 increased by $0.7 million as compared with 2015.

Other (Expense) Income, net

	2017	2016	2015
	(Amounts in millions)		
Other (expense) income, net	$ (16.1)	$ 2.3	$ (39.1)

Other expense, net increased $18.4 million from income of $2.3 million in 2016 due primarily to a $13.2 million increase in losses arising from transactions in currencies other than our sites' functional currencies and a $3.6 million increase in losses from foreign exchange contracts. The net change was primarily due to the foreign currency exchange rate movements in the Mexican peso, Euro, Brazilian real and British pound in relation to the U.S. dollar during the year ended December 31, 2017, as compared with the same period in 2016.

Other income, net increased $41.4 million from expense of $39.1 million in 2015 to income of $2.3 million in 2016. The increase was primarily due to a $58.7 million decrease in losses arising from transactions in currencies other than our sites' functional currencies, partially offset by a $18.2 million decrease in gains from foreign exchange contracts. The net change was primarily due to the foreign currency exchange rate movements in the Brazilian real, Canadian dollar and British pound in relation to the U.S. dollar during the year ended December 31, 2016, as compared with the same period in 2015, and the $18.5 million loss as a result of the remeasurement of our Venezuelan bolivar-denominated net monetary assets in the first quarter of 2015 that did not recur.

Tax Expense and Tax Rate

	2017	2016	2015
	(Amounts in millions, except percentages)		
Provision for income taxes	$ 258.7	$ 77.4	$ 148.4
Effective tax rate	98.4%	36.3%	36.0%

On December 22, 2017, the U.S. enacted the Tax Cuts and Jobs Act of 2017 (the “Act”), which significantly changed U.S. tax law. The Act, among other things, lowered the Company’s U.S. statutory federal income tax rate from 35% to 21% effective January 1, 2018, while imposing a deemed repatriation tax on deferred foreign income and implementing a modified territorial tax system. While the Act provides for a territorial tax system, beginning in 2018, it provides for two new anti-base erosion provisions, the global intangible low-taxed income (“GILTI”) provision and the base-erosion and anti-abuse tax (“BEAT”) provision which effectively creates a new minimum tax on certain future foreign earnings.

The 2017 tax rate differed from the federal statutory rate of 35% primarily due to the impacts pursuant to enactment of the Act, the net impact of foreign operations, the establishment of valuation allowances against our deferred tax assets in various foreign jurisdictions, primarily Mexico, and taxes related to the sales of the Gestra and Vogt businesses. Our effective tax rate of 98.4% for the year ended December 31, 2017 increased from 36.3% in 2016 due to the tax impacts described above. The 2016 tax rate differed from the federal statutory rate of 35% primarily due to the net impact of foreign operations, tax impacts from our Realignment Programs and losses in certain foreign jurisdictions for which no tax benefit was provided.

The 2015 tax rate differed from the federal statutory rate of 35% primarily due to tax impacts of the Realignment Programs, the non-deductible Venezuelan exchange rate remeasurement loss, and the establishment of a valuation allowance against our deferred tax assets in Brazil in the amount of $12.6 million, partially offset by the net impact of foreign operations, which included the impacts of lower foreign tax rates and changes in our reserves established for uncertain tax positions.

Our effective tax rate is based upon current earnings and estimates of future taxable earnings for each domestic and international location. Changes in any of these and other factors, including our ability to utilize foreign tax credits and net operating losses or results from tax audits, could impact the tax rate in future periods. As of December 31, 2017, we have foreign tax credits of $7.5 million, expiring in 2026 and 2027 against which we recorded a valuation allowance of $7.5 million. Additionally, we have recorded other net deferred tax assets of $52.0 million, which relate to net operating losses, tax credits and other deductible temporary differences that are available to reduce taxable income in future periods, most of which do not have a definite expiration. Should we not be able to utilize all or a portion of these credits and losses, our effective tax rate would increase.

Net Earnings and Earnings Per Share

	2017	2016	2015
	(Amounts in millions, except per share amounts)		
Net earnings attributable to Flowserve Corporation	$ 2.7	$ 132.5	$ 258.4
Net earnings per share — diluted	$ 0.02	$ 1.01	$ 1.93
Average diluted shares	131.4	131.0	133.8

Net earnings in 2017 decreased by $129.8 million to $2.7 million, or to $0.02 per diluted share, as compared with 2016. The decrease was primarily attributable to a $67.4 million increase in operating income, partially offset by a $18.4 million increase in other expense, net, a $0.4 million decrease in interest expense and a $181.3 million increase in tax expense.

Net earnings in 2016 decreased by $125.9 million million to $132.5 million, or to $1.01 per diluted share, as compared with 2015. The decrease was primarily attributable to a $246.7 million decrease in operating income, partially offset by a $41.4 million increase in other income, net, a $5.2 million decrease in interest expense and a $71.0 million decrease in tax expense.

Other Comprehensive Income (Loss)

	2017	2016	2015
	(Amounts in millions)		
Other comprehensive income (loss)	$ 119.8	$ (85.8)	$ (156.7)

Other comprehensive income in 2017 increased by $205.6 million to $119.8 million from a loss of $85.8 million in 2016. The income was primarily due to foreign currency translation adjustments resulting primarily from exchange rate movements of the Euro, British pound and Indian rupee versus the U.S. dollar at December 31, 2017 as compared with 2016.

Other comprehensive loss in 2016 decreased by $70.9 million to $85.8 million as compared to $156.7 million in 2015. The loss was primarily due to foreign currency translation adjustments resulting primarily from exchange rate movements of the British pound, Euro and Mexican peso versus the U.S. dollar at December 31, 2016 as compared with 2015.

Business Segments

We conduct our operations through three business segments based on type of product and how we manage the business. We evaluate segment performance and allocate resources based on each segment’s operating income. See Note 16 to our consolidated financial statements included in Item 8 of this Annual Report for further discussion of our segments. The key operating results for our three business segments, EPD, IPD and FCD, are discussed below.

Engineered Product Division Segment Results

Our largest business segment is EPD, through which we design, manufacture, distribute and service custom and other highly-engineered pumps and pump systems, mechanical seals and auxiliary systems (collectively referred to as "original equipment"). EPD includes longer lead time, highly-engineered pump products and mechanical seals that are generally manufactured within shorter lead times. EPD also manufactures replacement parts and related equipment and provides aftermarket services. EPD primarily operates in the oil and gas, power generation, chemical, and general industries. EPD operates in 47 countries with 30 manufacturing facilities worldwide, nine of which are located in Europe, nine in North America, seven in Asia and five in Latin America, and it has 123 QRCs, including those co-located in manufacturing facilities and/or shared with FCD.

	EPD		
	2017	2016	2015
	(Amounts in millions, except percentages)		
Bookings	$ 1,842.1	$ 1,823.8	$ 2,065.6
Sales	1,775.4	1,996.0	2,256.8
Gross profit	544.5	621.6	738.3
Gross profit margin	30.7%	31.1%	32.7%
Segment operating income	156.8	167.4	320.0
Segment operating income as a percentage of sales	8.8%	8.4%	14.2%
Backlog (at period end)	1,027.7	968.8	1,160.5

Bookings in 2017 increased by $18.3 million, or 1.0%, as compared with 2016 and included an order for approximately $80 million to provide pumps and related equipment for the Hengli Integrated Refining Complex Project in China. The increase included currency benefits of approximately $11 million. The increase in customer bookings was primarily driven by the oil and gas and chemical industries, partially offset by a decrease in the power generation and general industries. Customer bookings increased $112.8 million into Asia Pacific and $39.0 million into Africa and were partially offset by decreased customer bookings of $60.1 million into the Middle East, $46.9 million into Europe, $20.0 million into North America and $18.4 million into Latin America. The increase was driven by customer original equipment bookings. Of the $1.8 billion of bookings in 2017, approximately 51% were from oil and gas, 19% from chemical, 17% from general industries and 13% from power generation. Interdivision bookings (which are eliminated and are not included in consolidated bookings as disclosed above) increased $6.6 million.

Bookings in 2016 decreased by $241.8 million, or 11.7%, as compared with 2015. The decrease included negative currency effects of approximately $76 million. The decrease in customer bookings was primarily driven by the oil and gas and general industries, and to a lesser extent, the chemical industry. Customer bookings decreased $87.0 million into Europe, $52.0 million into Latin America, $38.0 million into North America, $36.4 million into the Middle East, $26.2 million into Asia Pacific and $2.6 million into Africa. The decrease was primarily driven by decreased customer original equipment bookings. Of the $1.8 billion of bookings in 2016, approximately 48% were from oil and gas, 17% from general industries, 18% from chemical, and 17% from power generation. Interdivision bookings (which are eliminated and are not included in consolidated bookings as disclosed above) decreased $8.4 million.

Sales in 2017 decreased $220.6 million, or 11.1%, as compared with 2016. The decrease included currency benefits of approximately $13 million. The decrease was more heavily weighted towards customer original equipment sales, resulting from decreased customer sales of $129.2 million into North America, $64.0 million into Latin America, $15.0 million into Europe, $11.2 million into the Middle East and $6.3 million into Africa. Interdivision sales (which are eliminated and are not included in consolidated sales as disclosed above) increased $4.5 million.

Sales in 2016 decreased $260.8 million, or 11.6%, as compared with 2015. The decrease included negative currency effects of approximately $88 million. The decrease was proportionally driven by decreased original equipment and aftermarket sales, resulting from decreased customer sales of $110.2 million into Latin America, $84.3 million into North America, $27.7 million into Europe, $19.3 million into Africa, $13.5 million into Asia Pacific and $2.0 million into the Middle East. Interdivision sales (which are eliminated and are not included in consolidated sales as disclosed above) decreased $14.0 million.

Gross profit in 2017 decreased by $77.1 million, or 12.4%, as compared with 2016. Gross profit margin in 2017 of 30.7% decreased from 31.1% in 2016. The decrease in gross profit margin was primarily attributable to the negative impact of decreased sales on our absorption of fixed manufacturing costs and lower margin projects that shipped from backlog, partially offset by lower costs and increased savings related to our Realignment Programs, a mix shift to higher margin aftermarket sales and $10.9 million of charges to write down inventory in Brazil in 2016 that did not recur.

Gross profit in 2016 decreased by $116.7 million, or 15.8%, as compared with 2015. Gross profit margin in 2016 of 31.1% decreased from 32.7% in 2015. The decrease in gross profit margin was primarily attributable to the negative impact of decreased sales on our absorption of fixed manufacturing costs, a charge to write down inventory in Brazil and increased charges related to our Realignment Programs, partially offset by realignment savings achieved.

Operating income in 2017 decreased by $10.6 million, or 6.3%, as compared with 2016. The decrease included currency benefits of approximately $1 million. The decrease was due to the $77.1 million decrease in gross profit, partially offset by a $58.8 million decrease in SG&A (including an increase due to currency effects of approximately $2 million). The decrease in SG&A is primarily due to EPD's $71.2 million portion of the $73.5 million reserve established for our primary Venezuelan customer in the third quarter of 2016 that did not recur and decreased charges and increased savings related to our Realignment Programs, partially offset by a $26.0 million impairment charge in the second quarter of 2017 related to our manufacturing facility in Brazil.

Operating income in 2016 decreased by $152.6 million, or 47.7%, as compared with 2015. The decrease included negative currency effects of approximately $10 million. The decrease was due to the $116.7 million decrease in gross profit, a $31.4 million increase in SG&A (including a decrease due to currency effects of approximately $22 million) and a $7.7 million loss on the sale of a non-strategic foundry business. The increase in SG&A is primarily due to increased bad debt expense as a result of EPD's $71.2 million portion of the $73.5 million reserve established for our primary Venezuelan customer in the third quarter of 2016, partially offset by savings achieved related to our Realignment Programs and lower selling-related expenses.

Backlog of $1.0 billion at December 31, 2017 increased by $58.9 million, or 6.1%, as compared with December 31, 2016. Currency effects provided an increase of approximately $52 million. Backlog at December 31, 2017 included $16.0 million of interdivision backlog (which is eliminated and not included in consolidated backlog as disclosed above). Backlog of $1.0 billion at December 31, 2016 decreased by $191.7 million, or 16.5%, as compared with December 31, 2015. Currency effects provided a decrease of approximately $2 million. The decrease includes the impact of cancellations of orders booked during prior years. Order cancellations do not typically result in material negative impacts to our financial results due to the cancellation provisions of our long lead time contracts. Backlog at December 31, 2016 included $11.7 million of interdivision backlog (which is eliminated and not included in consolidated backlog as disclosed above).

Industrial Product Division Segment Results

Through IPD we design, manufacture, distribute and service engineered and pre-configured industrial pumps and pump systems, including submersible motors and specialty products, collectively referred to as "original equipment." Additionally, IPD manufactures replacement parts and related equipment, and provides a full array of support services, collectively referred to as "aftermarket". IPD primarily operates in the oil and gas, chemical, water management, power generation and general industries. IPD operates 19 manufacturing facilities, five of which are located in the U.S and eight in Europe and six in Asia and it operates 30 QRCs worldwide, including 19 sites in Europe and six in the U.S. two in Latin America and three in Asia, including those co-located in manufacturing facilities and/or shared with EPD.

	IPD		
	2017	2016	2015
	(Amounts in millions, except percentages)		
Bookings	$ 821.7	$ 797.7	$ 887.2
Sales	775.2	835.1	981.9
Gross profit	143.6	182.5	238.7
Gross profit margin	18.5 %	21.9 %	24.3%
Segment operating (loss) income	(49.5)	(6.4)	29.1
Segment operating (loss) income as a percentage of sales	(6.4)%	(0.8)%	3.0%
Backlog (at period end)	424.3	375.6	424.6

Bookings in 2017 increased by $24.0 million, or 3.0%, as compared with 2016. The increase included currency benefits of approximately $7 million. The increase in customer bookings was primarily driven by the oil and gas and general industries, partially offset by a decrease in the chemical industry. Bookings increased $23.8 million into Europe, $19.3 million into Latin America and $12.6 million into North America and were partially offset by decreased bookings of $22.5 million into the Middle East and $18.2 million into Asia Pacific. The increase was driven by customer original equipment bookings. Of the $821.7 million of bookings in 2017, approximately 45% were from general industries, 19% from chemical, 17% from oil and gas, 13% from water management and 6% from power generation. Interdivision bookings (which are eliminated and are not included in consolidated bookings as disclosed above) increased $1.7 million.

Bookings in 2016 decreased by $89.5 million, or 10.1%, as compared with 2015. The decrease included negative currency effects of approximately $10 million. The decrease in customer bookings was primarily driven by the oil and gas, power generation and chemical industries. Bookings decreased $36.7 million into Asia Pacific, $19.1 million into Europe, $12.5 million into Africa, $7.7 million into Latin America and $7.2 million into North America. The decrease was driven by customer original equipment bookings. Of the $797.7 million of bookings in 2016, approximately 44% were from general industries, 22% from chemical, 14% from oil and gas, 14% from water management and 6% from power generation. Interdivision bookings (which are eliminated and are not included in consolidated bookings as disclosed above) decreased $7.4 million.

Sales in 2017 decreased by $59.9 million, or 7.2%, as compared with 2016. The decrease included currency benefits of approximately $8 million and was driven by decreased customer original equipment sales. Customer sales decreased $35.0 million into Asia Pacific, $26.0 million into North America, $14.1 million into Africa and $5.7 million into Latin America, partially offset by increased sales of $10.0 million into the Middle East and $7.4 million into Europe. Interdivision sales (which are eliminated and are not included in consolidated sales as disclosed above) increased $0.4 million.

Sales in 2016 decreased by $146.8 million, or 15.0%, as compared with 2015. The decrease included negative currency effects of approximately $13 million and was primarily driven by customer original equipment sales. Customer sales decreased $54.8 million into Europe, $31.3 million into North America, $17.8 million into Asia Pacific, $14.5 million into the Middle East, $13.1 million into Latin America and $5.4 million into Africa. Interdivision sales (which are eliminated and are not included in consolidated sales as disclosed above) decreased $9.0 million.

Gross profit in 2017 decreased by $38.9 million, or 21.3%, as compared with 2016. Gross profit margin in 2017 of 18.5% decreased from 21.9% in 2016. The decrease in gross profit margin was primarily attributable to a $16.9 million charge in the second quarter of 2017 for costs incurred related to a contract to supply oil and gas platform equipment to an end user in Latin America and the negative impact of decreased sales on our absorption of fixed manufacturing costs, partially offset by lower charges and increased savings related to our Realignment Programs.

Gross profit in 2016 decreased by $56.2 million, or 23.5%, as compared with 2015. Gross profit margin in 2016 of 21.9% decreased from 24.3% in 2015. The decrease in gross profit margin was primarily attributable to the negative impact of decreased sales on our absorption of fixed manufacturing costs, lower margin projects that shipped from backlog and the unfavorable impact of short-term operational inefficiencies related to the initial execution of certain Realignment Programs, partially offset by savings achieved related to our Realignment Programs and the reduced impact of SIHI purchase accounting adjustments in 2016.

Operating loss for 2017 increased by $43.1 million, or 673.4%, as compared with 2016. The increase included negative currency effects of approximately $1 million. The increase was primarily due to the $38.9 million decrease in gross profit and a $4.2 million increase in SG&A (including an increase due to currency effects of approximately $2 million). The increase in SG&A is primarily due to increased charges related to our Realignment Programs which were partially offset by increased savings related to our Realignment Programs.

Operating loss for 2016 decreased by $35.5 million, or 122.0%, as compared with 2015. The decrease included currency benefits of approximately $1 million. The decrease was primarily due to the $56.2 million decrease in gross profit, partially offset by a $20.8 million decrease in SG&A related primarily to savings achieved and decreased charges related to our Realignment Programs, lower SIHI integration costs and lower selling-related expenses.

Backlog of $424.3 million at December 31, 2017 increased by $48.7 million, or 13.0%, as compared with December 31, 2016. Currency effects provided an increase of approximately $38 million. Backlog at December 31, 2017 included $17.3 million of interdivision backlog (which is eliminated and not included in consolidated backlog as disclosed above). Backlog of $375.6 million at December 31, 2016 decreased by $49.0 million, or 11.5%, as compared with December 31, 2015. Currency effects provided a decrease of approximately $17 million. Backlog at December 31, 2016 included $14.2 million of interdivision backlog (which is eliminated and not included in consolidated backlog as disclosed above).

Flow Control Division Segment Results

Our second largest business segment is FCD, which designs, manufactures and distributes a broad portfolio of engineered-to-order and configured-to-order isolation valves, control valves, valve automation products, boiler controls and related services. FCD leverages its experience and application know-how by offering a complete menu of engineered services to complement its expansive product portfolio. FCD has a total of 47 manufacturing facilities and QRCs in 21 countries around the world, with five of its 22 manufacturing operations located in the U.S., 10 located in Europe and six located in

Asia Pacific. Based on independent industry sources, we believe that FCD is the third largest industrial valve supplier on a global basis.

	FCD		
	2017	2016	2015
	(Amounts in millions, except percentages)		
Bookings	$ 1,225.7	$ 1,216.8	$ 1,318.5
Sales	1,188.1	1,233.7	1,415.5
Gross profit	395.1	427.4	496.8
Gross profit margin	33.3%	34.6%	35.1%
Segment operating income	321.2	198.6	233.6
Segment operating income as a percentage of sales	27.0%	16.1%	16.5%
Backlog (at period end)	617.4	584.5	622.0

Bookings in 2017 increased $8.9 million, or 0.7%, as compared with 2016. The increase included currency benefits of approximately $9 million. The increase in customer bookings was primarily driven by the oil and gas, water management and power generation industries and was partially offset by decreased customer bookings in general industries. Increased customer bookings of $43.2 million into North America, $39.4 million into Asia Pacific and $10.0 million into Africa were largely offset by decreased bookings of $66.8 million into Europe and $18.8 million into Latin America. The increase was driven by customer aftermarket bookings. Of the $1.2 billion of bookings in 2017, approximately 32% were from oil and gas, 29% from chemical, 21% from general industries, 16% from power generation and 2% from water management.

Bookings in 2016 decreased $101.7 million, or 7.7%, as compared with 2015. The decrease included negative currency effects of approximately $22 million. The decrease in customer bookings was primarily driven by the oil and gas industry, and to a lesser extent, the general and chemical industries. Decreased customer bookings of $69.6 million into North America and $46.7 million into the Middle East were partially offset by increased bookings of $22.7 million into Europe and $6.6 million into Latin America. The decrease was primarily driven by decreased customer original equipment bookings. Of the $1.2 billion of bookings in 2016, approximately 31% were from oil and gas, 28% from chemical, 24% from general industries, 16% from power generation and 1% from water management.

Sales in 2017 decreased by $45.6 million, or 3.7%, as compared with 2016. The decrease included currency benefits of approximately $13 million and was driven by decreased customer original equipment sales. Sales decreased $21.4 million into Europe, $17.7 million into the Middle East and $16.1 million into Latin America, partially offset by an increase of $6.8 million into Asia Pacific.

Sales in 2016 decreased by $181.8 million, or 12.8%, as compared with 2015. The decrease included negative currency effects of approximately $14 million and was primarily driven by decreased customer original equipment sales. Sales decreased $83.5 million into Asia Pacific, $62.7 million into Europe, $45.0 million into North America and $18.3 million into Latin America, partially offset by an increase of $25.9 million into the Middle East.

Gross profit in 2017 decreased by $32.3 million, or 7.6%, as compared with 2016. Gross profit margin in 2017 of 33.3% decreased from 34.6% for the same period in 2016. The decrease in gross profit margin was primarily attributable to the negative impact of decreased sales on our absorption of fixed manufacturing costs and lower margin projects shipped from backlog, partially offset by increased savings achieved related to our Realignment Programs compared to the same period in 2016.

Gross profit in 2016 decreased by $69.4 million, or 14.0%, as compared with 2015. Gross profit margin in 2016 of 34.6% decreased from 35.1% for the same period in 2015. The decrease in gross profit margin was primarily attributable to the negative impact of decreased sales on our absorption of fixed manufacturing costs and lower margin projects that shipped from backlog, partially offset by savings achieved and decreased charges related to our Realignment Programs compared to the same period in 2015.

Operating income in 2017 increased by $122.6 million, or 61.7%, as compared with 2016. The increase included currency benefits of approximately $2 million. The increase was primarily attributable to the $141.2 million of pre-tax gain from the sales of the Gestra and Vogt businesses and a decrease in SG&A of $14 million (including an increase due to currency effects of approximately $1 million), partially offset by the $32.3 million decrease in gross profit. The decrease in SG&A was primarily due to savings achieved related to our Realignment Programs compared to the same period in 2016.

Operating income in 2016 decreased by $35.0 million, or 15.0%, as compared with 2015. The decrease included negative currency effects of approximately $3 million. The decrease was primarily attributable to the $69.4 million decrease in gross profit, partially offset by the $34.4 million decrease in SG&A. The decrease in SG&A was primarily due to savings achieved and decreased charges related to our Realignment Programs and lower selling-related expenses as compared to the same period in 2015.

Backlog of $617.4 million at December 31, 2017 increased by $32.9 million, or 5.6%, as compared with December 31, 2016. Currency effects provided an increase of approximately $20 million. Backlog of $584.5 million at December 31, 2016 decreased by $37.5 million, or 6.0%, as compared with December 31, 2015. Currency effects provided an increase of less than $1 million.

LIQUIDITY AND CAPITAL RESOURCES

Cash Flow Analysis

	2017	2016	2015
	(Amounts in millions)		
Net cash flows provided by operating activities	$ 311.1	$ 240.5	$ 440.8
Net cash flows provided (used) by investing activities	176.6	(91.5)	(525.3)
Net cash flows (used) provided by financing activities	(185.4)	(143.7)	37.7

Existing cash, cash generated by operations and borrowings available under our existing revolving credit facility are our primary sources of short-term liquidity. We monitor the depository institutions that hold our cash and cash equivalents on a regular basis, and we believe that we have placed our deposits with creditworthy financial institutions. Our sources of operating cash generally include the sale of our products and services and the conversion of our working capital, particularly accounts receivable and inventories. Our total cash balance at December 31, 2017 was $703.4 million, compared with $367.2 million at December 31, 2016 and $366.4 million at December 31, 2015.

Our cash provided by operating activities was $311.1 million, $240.5 million and $440.8 million in 2017, 2016 and 2015, respectively, which provided cash to support short-term working capital needs. Cash flow provided by working capital increased in 2017 due primarily to higher cash provided by lower accounts receivable of $60.2 million, lower inventory of $48.6 million and higher accounts payable of $12.4 million. During 2017, we contributed $44.9 million to our defined benefit pension plans. Working capital increased in 2016 due primarily to lower accounts payable of $71.0 million and lower accrued liabilities of $88.8 million, partially offset by higher cash provided by lower accounts receivable of $36.9 million and lower inventory of $52.9 million. During 2016, we contributed $42.5 million to our defined benefit pension plans.

Decreases in accounts receivable provided $60.2 million of cash flow in 2017, as compared with $36.9 million in 2016 and $53.1 million in 2015. The decrease in accounts receivable in 2017 was partially attributable to lower sales during the period as compared to the same period in 2016. For the fourth quarter of 2017 our days' sales outstanding ("DSO") was 75 days as compared to 74 days for 2016 and 72 days for 2015. We have not experienced a significant increase in customer payment defaults in 2017.

Decreases in inventory provided $48.6 million of cash flow in 2017 as compared with $52.9 million in 2016 and a use of $21.3 million in 2015. The source of cash from inventory in 2017 was primarily due to decreased work in process and finished goods inventory and in 2016 was primarily a result of decreased backlog. Inventory turns were 3.3 times at December 31, 2017, as compared with 3.3 times for 2016 and 3.7 for 2015. Our calculation of inventory turns does not reflect the impact of advanced cash received from our customers.

Increases in accounts payable provided $12.4 million of cash flow in 2017 compared with a use of $71.0 million in 2016. Decreases in accrued liabilities and income taxes payable used $3.4 million of cash flow in 2017 compared with $88.8 million in 2016.

Cash flows provided by investing activities were $176.6 million in 2017, as compared to a use of cash of $91.5 million and $525.3 million in 2016 and 2015, respectively. Cash flow provided by investing activities include $232.8 million of net proceeds from the sale of our Gestra and Vogt businesses. Cash outflows for 2015 resulted primarily from payments for the SIHI acquisition of $353.7 million. Capital expenditures were $61.6 million, $89.7 million and $181.9 million in 2017, 2016 and 2015, respectively. In 2018, we currently estimate capital expenditures to be between $80 million and $90 million before consideration of any acquisition activity.

Cash flows used by financing activities were $185.4 million in 2017 compared to $143.7 million in 2016 and a source of cash of $37.7 million in 2015. Cash outflows during 2017 resulted primarily from $99.2 million of dividend payments and $60.0 million in payments on long-term debt. Cash outflows during 2016 resulted primarily from $97.7 million of dividend payments and $60.0 million in payments on long-term debt. Cash inflows during 2015 resulted primarily from the $526.3 million in proceeds from the issuance of the 2022 EUR Senior Notes, partially offset by outflows from the repurchase of $303.7 million of our common stock, $93.7 million of dividend payments and $45.0 million in payments on long-term debt.

We have maintained our previously-announced policy of annually returning 40% to 50% of running two-year average net earnings to shareholders following attainment of the previously announced target leverage ratio. On November 13, 2014, our Board of Directors approved a $500.0 million share repurchase authorization, of which as of December 31, 2017 we had $160.7 million of remaining capacity. While we intend to adhere to this policy for the foreseeable future, any future returns of cash through dividends and/or share repurchases, will be reviewed individually, declared by our Board of Directors and implemented by management at its discretion, depending on our financial condition, business opportunities and market conditions at such time.

Our cash needs for the next 12 months are expected to be comparable to those of 2017. We believe cash flows from operating activities, combined with availability under our Revolving Credit Facility and our existing cash balances, will be sufficient to enable us to meet our cash flow needs for the next 12 months. However, cash flows from operations could be adversely affected by a decrease in the rate of general global economic growth and an extended decrease in capital spending of our customers, as well as economic, political and other risks associated with sales of our products, operational factors, competition, regulatory actions, fluctuations in foreign currency exchange rates and fluctuations in interest rates, among other factors. We believe that cash flows from operating activities and our expectation of continuing availability to draw upon our credit agreements are also sufficient to meet our cash flow needs for periods beyond the next 12 months.

Acquisitions and Dispositions

We regularly evaluate acquisition opportunities of various sizes. The cost and terms of any financing to be raised in conjunction with any acquisition, including our ability to raise economical capital, is a critical consideration in any such evaluation.

Note 2 to our consolidated financial statements included in Item 8 of this Annual Report contains a discussion of our disposition and acquisition activity.

Financing

Our credit agreement provides for an initial $400.0 million term loan ("Term Loan Facility") and a $1.0 billion revolving credit facility ("Revolving Credit Facility" and, together with the Term Loan Facility, the "Senior Credit Facility") with a maturity of October 14, 2020. On June 30, 2017, we amended our existing Senior Credit Facility. The amendment, among other changes, includes the following: (i) a decrease of the Revolving Credit Facility commitment from $1.0 billion to $800 million, (ii) an increase of the leverage ratio from 3.50 to 4.00 times debt to total Consolidated EBITDA through June 30, 2019, with a step-down to 3.75 for any fiscal quarter ending after July 1, 2019, (iii) the addition of a new pricing level on our senior unsecured long-term debt ratings for Ba2/BB, with an increase in interest rate margin for LIBOR loans to 2.00% and for base rate loans to 1.00% and (iv) a revision to the restrictions on the ability to incur debt by decreasing the maximum principal amount of priority debt allowed from 15% to 7.5% of the consolidated tangible assets and a decrease on the maximum amount of receivables that could be securitized from $200 million to $100 million. Subject to certain conditions, we have the right to increase the amount of the Term Loan Facility or the Revolving Credit Facility by an aggregate amount not to exceed $400.0 million. All other material terms under the Senior Credit Facility remained unchanged. A discussion of our debt and related covenants is included in Note 10 to our consolidated financial statements included in Item 8 of this Annual Report. We were in compliance with all covenants as of December 31, 2017.

Certain financing arrangements contain provisions that may result in an event of default if there was a failure under other financing arrangements to meet payment terms or to observe other covenants that could result in an acceleration of payment due. Such provisions are referred to as "cross default" provisions. The Senior Credit Facility and the Senior Notes as described in Note 10 to our consolidated financial statements included in Item 8 of this Annual Report are cross-defaulted to each other.

The rating agencies assign credit ratings to certain of our debt. Our access to capital markets and costs of debt could be directly affected by our credit ratings. Any adverse action with respect to our credit ratings could generally cause borrowing costs to increase and the potential pool of investors and funding sources to decrease. In particular, a decline in credit ratings would increase the cost of borrowing under our Senior Credit Facility.

Liquidity Analysis

Our cash balance increased by $336.3 million to $703.4 million as of December 31, 2017 as compared with December 31, 2016. The cash increase included $311.1 million in operating cash flows and $232.8 million of net proceeds from the sale of our Gestra and Vogt businesses, partially offset by $61.6 million in capital expenditures, $99.2 million in dividend payments and $60.0 million in payments on long-term debt.

Approximately 36% of our currently outstanding Term Loan Facility and $22.2 million of other short-term borrowings are due to mature in 2018 and 2019. Our Senior Credit Facility matures in October 2020. As of December 31, 2017, we had no revolving loans and $94.8 million letters of credit outstanding under our $800.0 million Revolving Credit Facility. Our Revolving Credit Facility is committed and held by a diversified group of financial institutions. For additional information on our Senior Credit Facility, see Note 10 to our consolidated financial statements included in Item 8 of this Annual Report.

At December 31, 2017 and 2016, as a result of increases in values of the plan's assets and our contributions to the plan, our U.S. pension plan was fully-funded as defined by applicable law. After consideration of our intent to maintain fully funded status, we contributed $20.0 million to our U.S. pension plan in 2017, excluding direct benefits paid of $3.8 million. We continue to maintain an asset allocation consistent with our strategy to maximize total return, while reducing portfolio risks through asset class diversification.

At December 31, 2017, $635.3 million of our total cash balance of $703.4 million was held by foreign subsidiaries, $529.2 million of which we consider permanently reinvested outside the U.S. Based on the expected 2018 liquidity needs of our various geographies, we currently do not anticipate the need to repatriate any permanently reinvested cash to fund domestic operations that would generate adverse tax results. However, in the event this cash is needed to fund domestic operations, we estimate the $529.2 million could be repatriated resulting in a U.S. cash tax liability between $5 million and $15 million.

OUTLOOK FOR 2018

Our future results of operations and other forward-looking statements contained in this Annual Report, including this MD&A, involve a number of risks and uncertainties — in particular, the statements regarding our goals and strategies, new product introductions, plans to cultivate new businesses, future economic conditions, revenue, pricing, gross profit margin and costs, capital spending, expected cost savings from our realignment programs, depreciation and amortization, research and development expenses, potential impairment of assets, tax rate and pending tax and legal proceedings. Our future results of operations may also be affected by employee incentive compensation including our annual program and the amount, type and valuation of share-based awards granted, as well as the amount of awards forfeited due to employee turnover. In addition to the various important factors discussed above, a number of other factors could cause actual results to differ materially from our expectations. See the risks described in "Item 1A. Risk Factors" of this Annual Report.

Our bookings were $3,803.9 million during 2017. Because a booking represents a contract that can be, in certain circumstances, modified or canceled, and can include varying lengths between the time of booking and the time of revenue recognition, there is no guarantee that bookings will result in comparable revenues or otherwise be indicative of future results.

The outlook for the oil and gas industry is heavily dependent on the demand growth from both mature markets and developing geographies. In the short-term, we believe that an improved oil price outlook will somewhat positively impact oil and gas upstream investment and impact mid-stream and downstream investment to a lesser extent. In addition, a recovery in the overall level of spending by oil and gas companies could continue to increase demand for our aftermarket products and services. We believe the medium and long-term fundamentals for this industry remain solid as the industry works through current excess supply while projected depletion rates of existing fields and forecasted long-term demand grow. With our long-standing reputation in providing successful solutions for upstream, mid-stream and downstream applications, along with the advancements in our portfolio of offerings, we believe that we continue to be well-positioned to assist our customers in this challenging environment.

We expect a continued competitive economic environment in 2018. Continued execution of our Realignment Programs and investments in broad-based employee incentive compensation, while providing long-term benefits, will pressure operating margins in 2018. We anticipate benefits from the continuation of our end-user strategies, the strength of our high margin aftermarket business, continued disciplined cost management, our diverse customer base, our broad product portfolio and our unified operating platform. Similar to prior years, we expect our results will be weighted towards the second half of the year. While we believe that our primary markets continue to provide opportunities, we remain cautious in our outlook for 2018 given the continuing uncertainty of capital spending in many of our markets and global economic conditions.

On December 31, 2017, we had $1,388.6 million of fixed-rate Senior Notes outstanding and $164.4 million of variable-rate debt under our Term Loan Facility. As of December 31, 2017, we had no variable to fixed interest rate derivative contracts.

However, because a portion of our debt carries a variable rate of interest, our debt is subject to volatility in rates, which could impact interest expense. We expect our interest expense in 2018 will be relatively consistent with amounts incurred in 2017. Our results of operations may also be impacted by unfavorable foreign currency exchange rate movements. See “Item 7A. Quantitative and Qualitative Disclosures about Market Risk” of this Annual Report.

We expect to generate sufficient cash from operations and have sufficient capacity under our Revolving Credit Facility to fund our working capital, capital expenditures, dividend payments, share repurchases, debt payments and pension plan contributions in 2018. The amount of cash generated or consumed by working capital is dependent on our level of revenues, customer cash advances, backlog, customer-driven delays and other factors. We seek to improve our working capital utilization, with a particular focus on improving the management of accounts receivable and inventory. In 2018, our cash flows for investing activities will be focused on strategic initiatives, information technology infrastructure, general upgrades and cost reduction opportunities and we currently estimate capital expenditures to be between $80 million and $90 million, before consideration of any acquisition activity. We have $60.0 million in scheduled principal repayments in 2018 under our Term Loan Facility, and we expect to comply with the covenants under our Senior Credit Facility in 2018. See Note 10 to our consolidated financial statements included in Item 8 of this Annual Report for further discussion of our debt covenants.

We currently anticipate that our minimum contribution to our qualified U.S. pension plan will be approximately $20 million, excluding direct benefits paid, in 2018 in order to maintain fully-funded status as defined by applicable law. We currently anticipate that our contributions to our non-U.S. pension plans will be approximately $10 million in 2018, excluding direct benefits paid.

Effective January 1, 2018, we adopted Accounting Standards Update ("ASU") No. 2014-09, "Revenue from Contracts with Customers (Topic 606)". A discussion of our adoption of the ASU is included in Note 1 to our consolidated financial statements included in Item 8 of this Annual Report.

CONTRACTUAL OBLIGATIONS AND COMMERCIAL COMMITMENTS

The following table presents a summary of our contractual obligations at December 31, 2017:

	Payments Due By Period				
	Within 1 Year	1-3 Years	3-5 Years	Beyond 5 Years	Total
	(Amounts in millions)				
Term Loan Facility and Senior Notes:	$ 60.0	$ 104.4	$ 1,091.2	$ 297.4	$ 1,553.0
Fixed interest payments(1)	37.0	73.9	62.9	10.5	184.3
Variable interest payments(2)	4.8	4.0	—	—	8.8
Other debt and capital lease obligations	15.6	6.6	—	—	22.2
Operating leases	51.7	66.3	43.6	71.7	233.3
Purchase obligations:(3)					
Inventory	407.5	2.5	—	—	410.0
Non-inventory	36.5	0.7	—	—	37.2
Pension and postretirement benefits(4)	60.0	119.7	127.2	308.3	615.2
Total	$ 673.1	$ 378.1	$ 1,324.9	$ 687.9	$ 3,064.0

(1) Fixed interest payments represent interest payments on the Senior Notes and Term Loan Facility as defined in Note 10 to our consolidated financial statements included in Item 8 of this Annual Report.

(2) Variable interest payments under our Term Loan Facility were estimated using a base rate of three-month LIBOR as of December 31, 2017.

(3) Purchase obligations are presented at the face value of the purchase order, excluding the effects of early termination provisions. Actual payments could be less than amounts presented herein.

(4) Retirement and postretirement benefits represent estimated benefit payments for our U.S. and non-U.S. defined benefit plans and our postretirement medical plans, as more fully described below and in Note 11 to our consolidated financial statements included in Item 8 of this Annual Report.

As of December 31, 2017, the gross liability for uncertain tax positions was $51.5 million. We do not expect a material payment related to these obligations to be made within the next twelve months. We are unable to provide a reasonably reliable estimate of the timing of future payments relating to the uncertain tax positions.

The following table presents a summary of our commercial commitments at December 31, 2017:

	Commitment Expiration By Period				
	Within 1 Year	1-3 Years	3-5 Years	Beyond 5 Years	Total
	(Amounts in millions)				
Letters of credit	$ 340.0	$ 141.3	$ 24.8	$ 23.2	$ 529.3
Surety bonds	93.6	6.8	0.7	0.4	101.5
Total	$ 433.6	$ 148.1	$ 25.5	$ 23.6	$ 630.8

We expect to satisfy these commitments through performance under our contracts.

PENSION AND POSTRETIREMENT BENEFITS OBLIGATIONS

Plan Descriptions

We and certain of our subsidiaries have defined benefit pension plans and defined contribution plans for full-time and part-time employees. Approximately 65% of total defined benefit pension plan assets and approximately 53% of defined benefit pension obligations are related to the U.S. qualified plan as of December 31, 2017. Unless specified otherwise, the references in this section are to all of our U.S. and non-U.S. plans. None of our common stock is directly held by these plans.

Our U.S. defined benefit plan assets consist of a balanced portfolio of equity and fixed income securities. Our non-U.S. defined benefit plan assets include a significant concentration of United Kingdom ("U.K.") fixed income securities, as discussed in Note 11 to our consolidated financial statements included in Item 8 of this Annual Report. We monitor investment allocations and manage plan assets to maintain acceptable levels of risk. At December 31, 2017, the estimated fair market value of U.S. and non-U.S. plan assets for our defined benefit pension plans increased to $713.5 million from $642.3 million at December 31, 2016. Assets were allocated as follows:

	U.S. Plan	
Asset category	2017	2016
Cash and Cash Equivalents	1%	—%
U.S. Large Cap	—%	20%
U.S. Small Cap	—%	4%
International Large Cap	—%	14%
Emerging Markets	—%	5%
World Equity	—%	8%
Global Equity	36%	—%
Global Real Assets	12%	—%
Equity securities	48%	51%
Diversified Credit	12%	—%
Liability Driven Investment	39%	39%
Long-Term Government/Credit	—%	10%
Fixed income	51%	49%

Asset category	Non-U.S. Plans	
	2017	2016
Cash and Cash Equivalents	3%	4%
North American Companies	3%	3%
Global Equity	3%	8%
Equity securities	6%	11%
U.K. Government Gilt Index	41%	31%
U.K. Corporate Bond Index	1%	1%
Global Fixed Income Bond	2%	2%
Liability Driven Investment	9%	11%
Fixed income	53%	45%
Multi-asset	22%	25%
Buy-in Contract	10%	9%
Other	6%	6%
Other Types	38%	40%

The projected benefit obligation ("Benefit Obligation") for our defined benefit pension plans was $875.3 million and $833.5 million as of December 31, 2017 and 2016, respectively. Benefits under our defined benefit pension plans are based primarily on participants' compensation and years of credited service.

The estimated prior service cost and the estimated actuarial net loss for the defined benefit pension plans that will be amortized from accumulated other comprehensive loss into net pension expense in 2018 is approximately $0.2 million and $9.2 million, respectively. We amortize estimated prior service costs and estimated net losses over the remaining expected service period or over the remaining expected lifetime for plans with only inactive participants.

We sponsor defined benefit postretirement medical plans covering certain current retirees and a limited number of future retirees in the U.S. These plans provide for medical and dental benefits and are administered through insurance companies. We fund the plans as benefits are paid, such that the plans hold no assets in any period presented. Accordingly, we have no investment strategy or targeted allocations for plan assets. The benefits under the plans are not available to new employees or most existing employees.

The Benefit Obligation for our defined benefit postretirement medical plans was $23.9 million and $27.3 million as of December 31, 2017 and 2016, respectively. The estimated actuarial net gain for the defined benefit postretirement medical plans that will be amortized from accumulated other comprehensive income into net pension expense in 2018 is $0.5 million. The estimated prior service cost that is expected to be amortized from accumulated other comprehensive loss into pension expense in 2018 is $0.1 million. We amortize any estimated net gain over the remaining average expected service period of approximately two years.

Accrual Accounting and Significant Assumptions

We account for pension benefits using the accrual method, recognizing pension expense before the payment of benefits to retirees. The accrual method of accounting for pension benefits requires actuarial assumptions concerning future events that will determine the amount and timing of the benefit payments.

Our key assumptions used in calculating our cost of pension benefits are the discount rate, the rate of compensation increase and the expected long-term rate of return on plan assets. We, in consultation with our actuaries, evaluate the key actuarial assumptions and other assumptions used in calculating the cost of pension and postretirement benefits, such as discount rates, expected return on plan assets for funded plans, mortality rates, retirement rates and assumed rate of compensation increases, and determine such assumptions as of December 31 of each year to calculate liability information as of that date and pension and postretirement expense for the following year. See discussion of our accounting for and assumptions related to pension and postretirement benefits in the "Our Critical Accounting Estimates" section of this MD&A.

In 2017, net pension expense for our defined benefit pension plans included in operating income was $35.2 million compared with $37.5 million in 2016 and $40.1 million in 2015.

The following are assumptions related to our defined benefit pension plans as of December 31, 2017:

	U.S. Plan	Non-U.S. Plans
Weighted average assumptions used to determine Benefit Obligation:		
Discount rate	3.63%	2.25%
Rate of increase in compensation levels	4.01	3.25
Weighted average assumptions used to determine 2017 net pension expense:		
Long-term rate of return on assets	6.00%	3.88%
Discount rate	4.00	2.34
Rate of increase in compensation levels	4.01	3.22

The following provides a sensitivity analysis of alternative assumptions on the U.S. qualified and aggregate non-U.S. pension plans and U.S. postretirement plans.

Effect of Discount Rate Changes and Constancy of Other Assumptions:

	0.5% Increase	0.5% Decrease
	(Amounts in millions)	
U.S. defined benefit pension plan:		
Effect on net pension expense	$ (1.3)	$ 1.3
Effect on Benefit Obligation	(17.2)	18.6
Non-U.S. defined benefit pension plans:		
Effect on net pension expense	(0.9)	1.1
Effect on Benefit Obligation	(31.2)	33.8
U.S. Postretirement medical plans:		
Effect on postretirement medical expense	(0.3)	0.2
Effect on Benefit Obligation	(0.7)	0.8

Effect of Changes in the Expected Return on Assets and Constancy of Other Assumptions:

	0.5% Increase	0.5% Decrease
	(Amounts in millions)	
U.S. defined benefit pension plan:		
Effect on net pension expense	$ (2.0)	$ 2.0
Non-U.S. defined benefit pension plans:		
Effect on net pension expense	(1.1)	1.1

As discussed below, accounting principles generally accepted in the U.S. (“U.S. GAAP”) provide that differences between expected and actual returns are recognized over the average future service of employees.

At December 31, 2017, as compared with December 31, 2016, we decreased our discount rate for the U.S. plan from 4.00% to 3.63% based on an analysis of publicly-traded investment grade U.S. corporate bonds, which had lower yields due to current market conditions. The average discount rate for the non-U.S. plans decreased from 2.34% to 2.25% based on analysis of bonds and other publicly-traded instruments, by country, which had lower yields due to market conditions. The average assumed rate of compensation remained relatively constant at approximately 4.01% for the U.S. plan and increased to 3.25% from 3.22% for our non-U.S. plans. To determine the 2017 pension expense, the expected rate of return on U.S. plan assets remained constant at 6.00% and we decreased our average rate of return on non-U.S. plan assets from 4.68% to 3.88%, primarily based on our target allocations and expected long-term asset returns. As the expected rate of return on plan assets is long-term in nature, short-term market changes do not significantly impact the rate. For all U.S. plans, we adopted the RP-2006 mortality tables and the MP-2017 improvement scale published in October 2017. We applied the RP-2006 tables based on the constituency of our plan population for union and non-union participants. We adjusted the improvement scale to utilize 75% of the ultimate improvement rate, consistent with assumptions adopted by the Social Security Administration trustees, based on long-term historical experience. Currently, we believe this approach provides the best estimate of our future obligation. Most plan participants elect to receive plan benefits as a lump sum at the end of service, rather than an annuity. As such, the updated mortality tables had an immaterial effect on our pension obligation.

We expect that the net pension expense for our defined benefit pension plans included in earnings before income taxes will be approximately $3.7 million lower in 2018 than the $35.2 million in 2017, primarily due to an increase in expected return on plan assets, a decrease in expected interest cost and no anticipated special events. We have used discount rates of 3.63%, 2.25% and 3.48% at December 31, 2017, in calculating our estimated 2018 net pension expense for U.S. pension plans, non-U.S. pension plans and postretirement medical plans, respectively.

The assumed ranges for the annual rates of increase in health care costs were 7.0% for 2017 and 7.5% for both 2016 and 2015, with a gradual decrease to 5.0% for 2025 and future years. If actual costs are higher than those assumed, this will likely put modest upward pressure on our expense for retiree health care.

Plan Funding

Our funding policy for defined benefit plans is to contribute at least the amounts required under applicable laws and local customs. We contributed $44.9 million, $46.8 million and $48.9 million to our defined benefit plans in 2017, 2016 and 2015, respectively. After consideration of our intent to remain fully-funded based on standards set by law, we currently anticipate that our contribution to our U.S. pension plan in 2018 will be approximately $20 million, excluding direct benefits paid. We expect to contribute approximately $10 million to our non-U.S. pension plans in 2018, excluding direct benefits paid.

For further discussion of our pension and postretirement benefits, see Note 11 to our consolidated financial statements included in Item 8 of this Annual Report.

OUR CRITICAL ACCOUNTING ESTIMATES

The process of preparing financial statements in conformity with U.S. GAAP requires the use of estimates and assumptions to determine reported amounts of certain assets, liabilities, revenues and expenses and the disclosure of related contingent assets and liabilities. These estimates and assumptions are based upon information available at the time of the estimates or assumptions, including our historical experience, where relevant. The most significant estimates made by management include: timing and amount of revenue recognition; deferred taxes, tax valuation allowances and tax reserves; reserves for contingent loss; pension and postretirement benefits; and valuation of goodwill, indefinite-lived intangible assets and other long-lived assets. The significant estimates are reviewed at least annually if not quarterly by management. Because of the uncertainty of factors surrounding the estimates, assumptions and judgments used in the preparation of our financial statements, actual results may differ from the estimates, and the difference may be material.

Our critical accounting policies are those policies that are both most important to our financial condition and results of operations and require the most difficult, subjective or complex judgments on the part of management in their application, often as a result of the need to make estimates about the effect of matters that are inherently uncertain. We believe that the following represent our critical accounting policies. For a summary of all of our significant accounting policies, see Note 1 to our consolidated financial statements included in Item 8 of this Annual Report. Management and our external auditors have discussed our critical accounting estimates and policies with the Audit Committee of our Board of Directors.

Revenue Recognition

Revenues for product sales are recognized when the risks and rewards of ownership are transferred to the customers, which is typically based on the contractual delivery terms agreed to with the customer and fulfillment of all but inconsequential or perfunctory actions. In addition, our policy requires persuasive evidence of an arrangement, a fixed or determinable sales price and reasonable assurance of collectibility. We defer the recognition of revenue when advance payments are received from customers before performance obligations have been completed and/or services have been performed. Freight charges billed to customers are included in sales and the related shipping costs are included in COS in our consolidated statements of income. Our contracts typically include cancellation provisions that require customers to reimburse us for costs incurred up to the date of cancellation, as well as any contractual cancellation penalties.

We enter into certain agreements with multiple deliverables that may include any combination of designing, developing, manufacturing, modifying, installing and commissioning of flow management equipment and providing services related to the performance of such products. Delivery of these products and services typically occurs within a one to two-year period, although many arrangements, such as "short-cycle" type orders, have a shorter timeframe for delivery. We separate deliverables into units of accounting based on whether the deliverable(s) have standalone value to the customer (impact of general rights of return is immaterial). Contract value is allocated ratably to the units of accounting in the arrangement based on their relative selling prices determined as if the deliverables were sold separately.

Revenues for long-term contracts that exceed certain internal thresholds regarding the size and duration of the project and provide for the receipt of progress billings from the customer are recorded on the percentage of completion method with progress measured on a cost-to-cost basis. Percentage of completion revenue represented approximately 4%, 5% and 7% of our consolidated sales as of December 31, 2017, 2016 and 2015, respectively.

Revenue on service and repair contracts is recognized after services have been agreed to by the customer and rendered. Revenues generated under fixed fee service and repair contracts are recognized on a ratable basis over the term of the contract. These contracts can range in duration, but generally extend for up to five years. Fixed fee service contracts represent approximately 1% of consolidated sales for each year presented.

In certain instances, we provide guaranteed completion dates under the terms of our contracts. Failure to meet contractual delivery dates can result in late delivery penalties or non-recoverable costs. In instances where the payment of such costs are deemed to be probable, we perform a project profitability analysis, accounting for such costs as a reduction of realizable revenues, which could potentially cause estimated total project costs to exceed projected total revenues realized from the project. In such instances, we would record reserves to cover such excesses in the period they are determined. In circumstances where the total projected revenues still exceed total projected costs, the incurrence of penalties or non-recoverable costs generally reduces profitability of the project at the time of subsequent revenue recognition. Our reported results would change if different estimates were used for contract costs or if different estimates were used for contractual contingencies.

Effective January 1, 2018, we adopted ASU No. 2014-09, "Revenue from Contracts with Customers (Topic 606)". A discussion of our adoption of the ASU is included in Note 1 to our consolidated financial statements included in Item 8 of this Annual Report.

Deferred Taxes, Tax Valuation Allowances and Tax Reserves

We recognize valuation allowances to reduce the carrying value of deferred tax assets to amounts that we expect are more likely than not to be realized. Our valuation allowances primarily relate to the deferred tax assets established for certain tax credit carryforwards and net operating loss carryforwards for non-U.S. subsidiaries, and we evaluate the realizability of our deferred tax assets by assessing the related valuation allowance and by adjusting the amount of these allowances, if necessary. We assess such factors as our forecast of future taxable income and available tax planning strategies that could be implemented to realize the net deferred tax assets in determining the sufficiency of our valuation allowances. Failure to achieve forecasted taxable income in the applicable tax jurisdictions could affect the ultimate realization of deferred tax assets and could result in an increase in our effective tax rate on future earnings. Implementation of different tax structures in certain jurisdictions could, if successful, result in future reductions of certain valuation allowances.

The amount of income taxes we pay is subject to ongoing audits by federal, state and foreign tax authorities, which often result in proposed assessments. Significant judgment is required in determining income tax provisions and evaluating tax positions. We establish reserves for open tax years for uncertain tax positions that may be subject to challenge by various tax authorities. The consolidated tax provision and related accruals include the impact of such reasonably estimable losses and related interest and penalties as deemed appropriate. Tax benefits recognized in the financial statements from uncertain tax positions are measured based on the largest benefit that has a greater than fifty percent likelihood of being realized upon ultimate settlement.

While we believe we have adequately provided for any reasonably foreseeable outcome related to these matters, our future results may include favorable or unfavorable adjustments to our estimated tax liabilities. To the extent that the expected tax outcome of these matters changes, such changes in estimate will impact the income tax provision in the period in which such determination is made.

Reserves for Contingent Loss

Liabilities are recorded for various contingencies arising in the normal course of business when it is both probable that a loss has been incurred and such loss is estimable. Assessments of reserves are based on information obtained from our independent and in-house experts, including recent legal decisions and loss experience in similar situations. The recorded legal reserves are susceptible to changes due to new developments regarding the facts and circumstances of each matter, changes in political environments, legal venue and other factors. Recorded environmental reserves could change based on further analysis of our properties, technological innovation and regulatory environment changes.

Estimates of liabilities for unsettled asbestos-related claims are based on known claims and on our experience during the preceding two years for claims filed, settled and dismissed, with adjustments for events deemed unusual and unlikely to recur. A substantial majority of our asbestos-related claims are covered by insurance or indemnities. Estimated indemnities and receivables from insurance carriers for unsettled claims and receivables for settlements and legal fees paid by us for asbestos-related claims are estimated using our historical experience with insurance recovery rates and estimates of future recoveries, which include estimates of coverage and financial viability of our insurance carriers. We have claims pending against certain insurers that, if resolved more favorably than estimated future recoveries, would result in discrete gains in the applicable quarter. We are currently unable to estimate the impact, if any, of unasserted asbestos-related claims, although future claims would also be subject to existing indemnities and insurance coverage. Changes in claims filed, settled and dismissed and differences between actual and estimated settlement costs and insurance or indemnity recoveries could impact future expense.

Pension and Postretirement Benefits

We provide pension and postretirement benefits to certain of our employees, including former employees, and their beneficiaries. The assets, liabilities and expenses we recognize and disclosures we make about plan actuarial and financial information are dependent on the assumptions and estimates used in calculating such amounts. The assumptions include factors such as discount rates, health care cost trend rates, inflation, expected rates of return on plan assets, retirement rates, mortality rates, turnover, rates of compensation increases and other factors.

The assumptions utilized to compute expense and benefit obligations are shown in Note 11 to our consolidated financial statements included in Item 8 of this Annual Report. These assumptions are assessed annually in consultation with independent actuaries and investment advisors as of December 31 and adjustments are made as needed. We evaluate prevailing market conditions and local laws and requirements in countries where plans are maintained, including appropriate rates of return, interest rates and medical inflation (health care cost trend) rates. We ensure that our significant assumptions are within the reasonable range relative to market data. The methodology to set our significant assumptions includes:

- Discount rates are estimated using high quality debt securities based on corporate or government bond yields with a duration matching the expected benefit payments. For the U.S. the discount rate is obtained from an analysis of publicly-traded investment-grade corporate bonds to establish a weighted average discount rate. For plans in the U.K. and the Eurozone we use the discount rate obtained from an analysis of AA-graded corporate bonds used to generate a yield curve. For other countries or regions without a corporate AA bond market, government bond rates are used. Our discount rate assumptions are impacted by changes in general economic and market conditions that affect interest rates on long-term high-quality debt securities, as well as the duration of our plans' liabilities.
- The expected rates of return on plan assets are derived from reviews of asset allocation strategies, expected long-term performance of asset classes, risks and other factors adjusted for our specific investment strategy. These rates are impacted by changes in general market conditions, but because they are long-term in nature, short-term market changes do not significantly impact the rates. Changes to our target asset allocation also impact these rates.
- The expected rates of compensation increase reflect estimates of the change in future compensation levels due to general price levels, seniority, age and other factors.

Depending on the assumptions used, the pension and postretirement expense could vary within a range of outcomes and have a material effect on reported earnings. In addition, the assumptions can materially affect benefit obligations and future cash funding. Actual results in any given year may differ from those estimated because of economic and other factors.

We evaluate the funded status of each retirement plan using current assumptions and determine the appropriate funding level considering applicable regulatory requirements, tax deductibility, reporting considerations, cash flow requirements and other factors. We discuss our funding assumptions with the Finance Committee of our Board of Directors.

Valuation of Goodwill, Indefinite-Lived Intangible Assets and Other Long-Lived Assets

The initial recording of goodwill and intangible assets requires subjective judgments concerning estimates of the fair value of the acquired assets. We test the value of goodwill and indefinite-lived intangible assets for impairment as of December 31 each year or whenever events or circumstances indicate such assets may be impaired.

The test for goodwill impairment involves significant judgment in estimating projections of fair value generated through future performance of each of the reporting units. The identification of our reporting units began at the operating segment level and considered whether components one level below the operating segment levels should be identified as reporting units for purpose of testing goodwill for impairment based on certain conditions. These conditions included, among other factors, (i) the extent to which a component represents a business and (ii) the aggregation of economically similar components within the operating segments and resulted in four reporting units. Other factors that were considered in determining whether the aggregation of components was appropriate included the similarity of the nature of the products and services, the nature of the production processes, the methods of distribution and the types of industries served.

An impairment loss for goodwill is recognized if the implied fair value of goodwill is less than the carrying value. We estimate the fair value of our reporting units based on an income approach, whereby we calculate the fair value of a reporting unit based on the present value of estimated future cash flows. A discounted cash flow analysis requires us to make various judgmental assumptions about future sales, operating margins, growth rates and discount rates, which are based on our budgets, business plans, economic projections, anticipated future cash flows and market participants. Assumptions are also made for varying perpetual growth rates for periods beyond the long-term business plan period.

We did not record an impairment of goodwill in 2017, 2016 or 2015; however, the estimated fair value of our EPO and IPD reporting units reduced significantly in 2016 and 2015 due to broad-based capital spending declines and heightened pricing pressure experienced in the oil and gas markets which are anticipated to continue in the near to mid-term. The EPO reporting unit is a component of our EPD reporting segment and is primarily focused on long lead time, custom and other highly-engineered pumps and pump systems. As of December 31, 2017, our EPO reporting unit had approximately $159 million of goodwill and its estimated fair value exceeded its carrying value by approximately 82% as compared to approximately $156 million of goodwill and its estimated fair value exceeded its carrying value by approximately 45% as of December 31, 2016. In addition, our IPD reporting unit had approximately $319 million of goodwill and its fair value exceeded its carrying value by approximately 66% as of December 31, 2017 as compared to approximately $298 million of goodwill and its fair value exceeded its carrying value by approximately 70% as of December 31, 2016. Key assumptions used in determining the estimated fair value of our EPO and IPD reporting units included the annual operating plan and forecasted operating results, successful execution of our current realignment programs and identified strategic initiatives, a constant cost of capital, continued stabilization and mid to long-term improvement of the macro-economic conditions of the oil and gas market, and a relatively stable global gross domestic product. A 100 basis point increase in our cost of capital would reduce the estimated fair values of both EPO and IPD reporting units by approximately 12%, which coupled with a prolonged down cycle of the oil and gas markets, could potentially put both reporting units' goodwill at risk of a future impairment. Although we have concluded that there is no impairment on the goodwill associated with our EPO and IPD reporting units as of December 31, 2017, we will continue to closely monitor their performance and related market conditions for future indicators of potential impairment and reassess accordingly.

We also consider our market capitalization in our evaluation of the fair value of our goodwill. Our market capitalization decreased slightly as compared with 2016 and did not indicate a potential impairment of our goodwill as of December 31, 2017.

Impairment losses for indefinite-lived intangible assets are recognized whenever the estimated fair value is less than the carrying value. Fair values are calculated for trademarks using a "relief from royalty" method, which estimates the fair value of a trademark by determining the present value of estimated royalty payments that are avoided as a result of owning the trademark. This method includes judgmental assumptions about sales growth and discount rates that have a significant impact on the fair value and are substantially consistent with the assumptions used to determine the fair value of our reporting units discussed above. We did not record a material impairment of our trademarks in 2017, 2016 or 2015.

The recoverable value of other long-lived assets, including property, plant and equipment and finite-lived intangible assets, is reviewed when indicators of potential impairments are present. The recoverable value is based upon an assessment of the estimated future cash flows related to those assets, utilizing assumptions similar to those for goodwill. Additional considerations related to our long-lived assets include expected maintenance and improvements, changes in expected uses and ongoing operating performance and utilization.

Due to uncertain market conditions and potential changes in strategy and product portfolio, it is possible that forecasts used to support asset carrying values may change in the future, which could result in non-cash charges that would adversely affect our financial condition and results of operations.

ACCOUNTING DEVELOPMENTS

We have presented the information about accounting pronouncements not yet implemented in Note 1 to our consolidated financial statements included in Item 8 of this Annual Report.

ITEM 7A. *QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK*

We have market risk exposure arising from changes in interest rates and foreign currency exchange rate movements. We are exposed to credit-related losses in the event of non-performance by counterparties to financial instruments, but we currently expect all counterparties will continue to meet their obligations given their current creditworthiness.

Interest Rate Risk

Our earnings are impacted by changes in short-term interest rates as a result of borrowings under our Senior Credit Facility, which bear interest based on floating rates. At December 31, 2017, we had $164.4 million of variable rate debt obligations outstanding under our Senior Credit Facility with a weighted average interest rate of 3.19%. A hypothetical change of 100 basis points in the interest rate for these borrowings, assuming constant variable rate debt levels, would have changed interest expense by $1.6 million for the year ended December 31, 2017.

Foreign Currency Exchange Rate Risk

A substantial portion of our operations are conducted by our subsidiaries outside of the U.S. in currencies other than the U.S. dollar. The primary currencies in which we operate, in addition to the U.S. dollar, are the Argentine peso, Australian dollar, Brazilian real, British pound, Canadian dollar, Chinese yuan, Colombian peso, Euro, Indian rupee, Japanese yen, Mexican peso, Singapore dollar, Swedish krona, Russian ruble, Malaysian ringgit and Venezuelan bolivar. Almost all of our non-U.S. subsidiaries conduct their business primarily in their local currencies, which are also their functional currencies. Foreign currency exposures arise from translation of foreign-denominated assets and liabilities into U.S. dollars and from transactions, including firm commitments and anticipated transactions, denominated in a currency other than a non-U.S. subsidiary's functional currency. In March 2015, we designated €255.7 million of our €500.0 million 2022 EUR Senior Notes as a net investment hedge of our investments in certain of our international subsidiaries that use the Euro as their functional currency. Generally, we view our investments in foreign subsidiaries from a long-term perspective and use capital structuring techniques to manage our investment in foreign subsidiaries as deemed necessary. We realized net gains (losses) associated with foreign currency translation of $98.8 million, $(72.0) million and $(173.4) million for the years ended December 31, 2017, 2016 and 2015, respectively, which are included in other comprehensive loss. The net gain in 2017 was primarily driven by the strengthening of the Euro, British pound and Indian rupee versus the U.S. dollar at December 31, 2017 as compared with December 31, 2016.

We employ a foreign currency risk management strategy to minimize potential changes in cash flows from unfavorable foreign currency exchange rate movements. Where available, the use of forward exchange contracts allows us to mitigate transactional exposure to exchange rate fluctuations as the gains or losses incurred on the forward exchange contracts will offset, in whole or in part, losses or gains on the underlying foreign currency exposure. Our policy allows foreign currency coverage only for identifiable foreign currency exposures. As of December 31, 2017, we had a U.S. dollar equivalent of $235.6 million in aggregate notional amount outstanding in foreign exchange contracts with third parties, compared with $393.8 million at December 31, 2016. Transactional currency gains and losses arising from transactions outside of our sites' functional currencies and changes in fair value of non-designated foreign exchange contracts are included in our consolidated results of operations. We recognized foreign currency net (losses) gains of $(14.0) million, $2.8 million and $(37.7) million for the years ended December 31, 2017, 2016 and 2015, respectively, which are included in other income (expense), net in the accompanying consolidated statements of income.

Based on a sensitivity analysis at December 31, 2017, a 10% change in the foreign currency exchange rates for the year ended December 31, 2017 would have impacted our net earnings by approximately $7 million. This calculation assumes that all currencies change in the same direction and proportion relative to the U.S. dollar and that there are no indirect effects, such as changes in non-U.S. dollar sales volumes or prices. This calculation does not take into account the impact of the foreign currency forward exchange contracts discussed above.

ITEM 8. *FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA*

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Shareholders of Flowserve Corporation

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of Flowserve Corporation and its subsidiaries as of December 31, 2017 and 2016, and the related consolidated statements of income, comprehensive income, shareholders’ equity and cash flows for each of the three years in the period ended December 31, 2017, including the related notes and schedule of valuation and qualifying accounts for each of the three years in the period ended December 31, 2017 appearing under Item15(a)(2) (collectively referred to as the “consolidated financial statements”). We also have audited the Company's internal control over financial reporting as of December 31, 2017, 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, 2017 and 2016**,** and the results of their operations and their cash flows for each of the three years in the period ended December 31, 2017 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, 2017, 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.

/s/ PricewaterhouseCoopers LLP

PricewaterhouseCoopers LLP
Dallas, Texas
February 28, 2018

We have served as the Company's auditor since 2000.

FLOWSERVE CORPORATION

CONSOLIDATED BALANCE SHEETS

	December 31, 2017	December 31, 2016
	(Amounts in thousands, except per share data)	
ASSETS		
Current assets:		
Cash and cash equivalents	$ 703,445	$ 367,162
Accounts receivable, net	856,711	882,638
Inventories, net	884,273	897,690
Prepaid expenses and other	114,316	150,199
Total current assets	2,558,745	2,297,689
Property, plant and equipment, net	671,796	724,805
Goodwill	1,218,188	1,205,054
Deferred taxes	51,974	83,722
Other intangible assets, net	210,049	214,527
Other assets, net	199,722	183,126
Total assets	$ 4,910,474	$ 4,708,923
LIABILITIES AND EQUITY		
Current liabilities:		
Accounts payable	$ 443,113	$ 412,087
Accrued liabilities	724,196	680,986
Debt due within one year	75,599	85,365
Total current liabilities	1,242,908	1,178,438
Long-term debt due after one year	1,499,658	1,485,258
Retirement obligations and other liabilities	496,954	407,839
Commitments and contingencies (See Note 12)		
Shareholders' equity:		
Common shares, $1.25 par value	220,991	220,991
Shares authorized — 305,000		
Shares issued — 176,793 and 176,793, respectively		
Capital in excess of par value	488,326	491,848
Retained earnings	3,503,947	3,598,396
Treasury shares, at cost — 46,471 and 46,980 shares, respectively	(2,059,558)	(2,078,527)
Deferred compensation obligation	6,354	8,507
Accumulated other comprehensive loss	(505,473)	(624,788)
Total Flowserve Corporation shareholders' equity	1,654,587	1,616,427
Noncontrolling interests	16,367	20,961
Total equity	1,670,954	1,637,388
Total liabilities and equity	$ 4,910,474	$ 4,708,923

See accompanying notes to consolidated financial statements.

FLOWSERVE CORPORATION

CONSOLIDATED STATEMENTS OF INCOME

	Year Ended December 31,		
	2017	2016	2015
	(Amounts in thousands, except per share data)		
Sales	$ 3,660,831	$ 3,990,487	$ 4,557,791
Cost of sales	(2,575,454)	(2,759,254)	(3,080,254)
Gross profit	1,085,377	1,231,233	1,477,537
Selling, general and administrative expense	(903,864)	(968,530)	(972,733)
Gain (loss) on sale of businesses	141,317	(7,664)	—
Net earnings from affiliates	12,592	12,926	9,861
Operating income	335,422	267,965	514,665
Interest expense	(59,730)	(60,137)	(65,270)
Interest income	3,429	2,804	2,065
Other (expense) income, net	(16,114)	2,280	(39,093)
Earnings before income taxes	263,007	212,912	412,367
Provision for income taxes	(258,679)	(77,380)	(148,351)
Net earnings, including noncontrolling interests	4,328	135,532	264,016
Less: Net earnings attributable to noncontrolling interests	(1,676)	(3,077)	(5,605)
Net earnings attributable to Flowserve Corporation	$ 2,652	$ 132,455	$ 258,411
Net earnings per share attributable to Flowserve Corporation common shareholders:			
Basic	$ 0.02	$ 1.02	$ 1.94
Diluted	0.02	1.01	1.93
Cash dividends declared per share	$ 0.76	$ 0.76	$ 0.72

See accompanying notes to consolidated financial statements.

FLOWSERVE CORPORATION

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

	Year Ended December 31,		
	2017	2016	2015
	(Amounts in thousands)		
Net earnings, including noncontrolling interests	$ 4,328	$ 135,532	$ 264,016
Other comprehensive income (loss):			
Foreign currency translation adjustments, net of deferred taxes of $19,593, $(8,628) and $6,093 in 2017, 2016 and 2015, respectively	98,830	(71,994)	(173,385)
Pension and other postretirement effects, net of deferred taxes of $(14,228), $9,737 and $(4,472) in 2017, 2016 and 2015, respectively	20,775	(16,069)	14,937
Cash flow hedging activity, net of deferred taxes of $(38), $(296) and $(831) in 2017, 2016 and 2015, respectively	148	2,220	1,752
Other comprehensive income (loss)	119,753	(85,843)	(156,696)
Comprehensive income, including noncontrolling interests	124,081	49,689	107,320
Comprehensive income attributable to noncontrolling interests	(2,114)	(3,787)	(7,036)
Comprehensive income attributable to Flowserve Corporation	$ 121,967	$ 45,902	$ 100,284

See accompanying notes to consolidated financial statements.

FLOWSERVE CORPORATION

CONSOLIDATED STATEMENTS OF SHAREHOLDERS' EQUITY

	Total Flowserve Corporation Shareholders' Equity									
	Common Stock		Capital in Excess of Par Value	Retained Earnings	Treasury Stock		Deferred Compensation Obligation	Accumulated Other Comprehensive Loss	Noncontrolling Interests	Total Equity
	Shares	Amount			Shares	Amount				
	(Amounts in thousands)									
Balance, as reported — January 1, 2015	176,793	$ 220,991	$ 495,600	$ 3,403,834	(42,444)	$ (1,830,919)	$ 10,558	$ (380,099)	$ 10,281	$ 1,930,246
Stock activity under stock plans	—	—	(41,860)	—	789	27,785	—	—	—	(14,075)
Stock-based compensation	—	—	34,797	19	—	—	—	—	—	34,816
Tax benefit associated with stock-based compensation	—	—	6,424	—	—	—	—	—	—	6,424
Net earnings	—	—	—	258,411	—	—	—	—	5,605	264,016
Cash dividends declared	—	—	—	(96,306)	—	—	—	—	—	(96,306)
Repurchases of common shares	—	—	—	—	(6,048)	(303,651)	—	—	—	(303,651)
Other comprehensive loss, net of tax	—	—	—	—	—	—	—	(158,133)	1,437	(156,696)
Purchase of shares from and dividends paid to noncontrolling interests	—	—	—	—	—	—	—	—	(67)	(67)
Other, net	—	—	—	—	—	—	(325)	—	—	(325)
Balance — December 31, 2015	176,793	220,991	494,961	3,565,958	(47,703)	(2,106,785)	10,233	(538,232)	17,256	1,664,382
Stock activity under stock plans	—	—	(33,571)	—	723	28,258	—	—	—	(5,313)
Stock-based compensation	—	—	30,203	10	—	—	—	—	—	30,213
Tax benefit associated with stock-based compensation	—	—	255	—	—	—	—	—	—	255
Net earnings	—	—	—	132,455	—	—	—	—	3,077	135,532
Cash dividends declared	—	—	—	(100,027)	—	—	—	—	—	(100,027)
Repurchases of common shares	—	—	—	—	—	—	—	—	—	—
Other comprehensive loss, net of tax	—	—	—	—	—	—	—	(86,556)	713	(85,843)
Purchase of shares from and dividends paid to noncontrolling interests	—	—	—	—	—	—	—	—	(85)	(85)
Other, net	—	—	—	—	—	—	(1,726)	—	—	(1,726)
Balance — December 31, 2016	176,793	$ 220,991	$ 491,848	$ 3,598,396	(46,980)	$ (2,078,527)	$ 8,507	$ (624,788)	$ 20,961	$ 1,637,388
ASU No. 2016-09, Compensation - Stock Compensation	—	—	(2,966)	2,966	—	—	—	—	—	—
Stock activity under stock plans	—	—	(23,479)	—	509	18,969	—	—	—	(4,510)
Stock-based compensation	—	—	22,820	—	—	—	—	—	—	22,820
Tax benefit associated with stock-based compensation	—	—	103	—	—	—	—	—	—	103
Net earnings	—	—	—	2,652	—	—	—	—	1,676	4,328
Cash dividends declared	—	—	—	(100,067)	—	—	—	—	—	(100,067)
Repurchases of common shares	—	—	—	—	—	—	—	—	—	—
Other comprehensive income, net of tax	—	—	—	—	—	—	—	119,315	438	119,753
Purchase of shares from and dividends paid to noncontrolling interests	—	—	—	—	—	—	—	—	(6,708)	(6,708)
Other, net	—	—	—	—	—	—	(2,153)	—	—	(2,153)
Balance — December 31, 2017	176,793	$ 220,991	$ 488,326	$ 3,503,947	(46,471)	$ (2,059,558)	$ 6,354	$ (505,473)	$ 16,367	$ 1,670,954

See accompanying notes to consolidated financial statements.

FLOWSERVE CORPORATION
CONSOLIDATED STATEMENTS OF CASH FLOWS

	Year Ended December 31,		
	2017	2016	2015
	(Amounts in thousands)		
Cash flows — Operating activities:			
Net earnings, including noncontrolling interests	$ 4,328	$ 135,532	$ 264,016
Adjustments to reconcile net earnings to net cash provided by operating activities:			
Depreciation	101,438	99,897	99,501
Amortization of intangible and other assets	17,016	16,855	27,586
(Gain) loss on sale of businesses	(141,317)	7,664	—
Stock-based compensation	22,820	30,213	34,816
Provision for U.S. Tax Cuts and Jobs Act of 2017 and Latin America accounts receivable reserve	115,320	73,452	—
Foreign currency, asset impairment and other non-cash adjustments	33,087	(8,127)	74,382
Change in assets and liabilities:			
Accounts receivable, net	60,216	36,927	53,060
Inventories, net	48,642	52,892	(21,260)
Prepaid expenses and other	42,159	(25,165)	(13,882)
Other assets, net	(9,224)	(20,310)	6,646
Accounts payable	12,403	(71,008)	(113,639)
Accrued liabilities and income taxes payable	(3,383)	(88,770)	51,073
Retirement obligations and other	(43,431)	16,372	(21,456)
Net deferred taxes	50,992	(15,948)	(84)
Net cash flows provided by operating activities	311,066	240,476	440,759
Cash flows — Investing activities:			
Capital expenditures	(61,602)	(89,699)	(181,861)
Payments for acquisition, net of cash acquired	—	—	(353,654)
Proceeds from disposal of assets	5,435	3,294	10,220
Proceeds from (payments for) for disposition of businesses	232,767	(5,064)	—
Net cash flows provided (used) by investing activities	176,600	(91,469)	(525,295)
Cash flows — Financing activities:			
Payments on long-term debt	(60,000)	(60,000)	(45,000)
Proceeds from issuance of senior notes	—	—	526,332
Payments of deferred loan costs	(1,503)	—	(5,108)
Proceeds under other financing arrangements	7,359	35,680	9,426
Payments under other financing arrangements	(19,030)	(12,636)	(34,949)
Payments related to tax withholding for stock-based compensation	(6,238)	(10,405)	(15,844)
Repurchases of common shares	—	—	(303,651)
Payments of dividends	(99,233)	(97,746)	(93,650)
Other	(6,708)	1,386	99
Net cash flows (used) provided by financing activities	(185,353)	(143,721)	37,655
Effect of exchange rate changes on cash	33,970	(4,568)	(37,025)
Net change in cash and cash equivalents	336,283	718	(83,906)
Cash and cash equivalents at beginning of year	367,162	366,444	450,350
Cash and cash equivalents at end of year	$ 703,445	$ 367,162	$ 366,444
Income taxes paid (net of refunds)	$ 59,409	$ 151,191	$ 152,536
Interest paid	56,808	57,393	57,030

See accompanying notes to consolidated financial statements.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS AS OF DECEMBER 31, 2017 AND 2016 AND FOR THE THREE YEARS ENDED DECEMBER 31, 2017

1. SIGNIFICANT ACCOUNTING POLICIES AND ACCOUNTING DEVELOPMENTS

We are principally engaged in the worldwide design, manufacture, distribution and service of industrial flow management equipment. We provide long lead time, custom and other highly-engineered pumps; standardized, general-purpose pumps; mechanical seals; industrial valves; and related automation products and solutions primarily for oil and gas, chemical, power generation, water management and other general industries requiring flow management products and services. Equipment manufactured and serviced by us is predominantly used in industries that deal with difficult-to-handle and corrosive fluids, as well as environments with extreme temperatures, pressure, horsepower and speed. Our business is affected by economic conditions in the United States ("U.S.") and other countries where our products are sold and serviced, by the cyclical nature and competitive environment of our industries served, by the relationship of the U.S. dollar to other currencies and by the demand for and pricing of our customers' end products.

Revision to Previously Reported Financial Information — As previously disclosed in our Quarterly Report on Form 10-Q for the quarterly period ended June 30, 2017, we identified accounting errors focused mainly at two of our non-U.S. sites in the inventory, accounts receivable, COS and SG&A balances for prior periods through the first quarter of 2017. We assessed these errors, individually and in the aggregate, and concluded that they were not material to any prior annual or interim period. However, to facilitate comparisons among periods we revised our previously issued audited consolidated financial information which is included in our 2016 Annual Report and unaudited condensed consolidated financial information for the interim periods included in our Form 10-Q/A and Form 10-Q for the quarters ended March 31, 2017 and June 30, 2017, respectively.

Venezuela — Our operations in Venezuela primarily consist of a service center that performs service and repair activities. Our Venezuelan subsidiary's sales for the year ended December 31, 2017 represented less than 0.5% of consolidated sales and its assets at December 31, 2017 represented less than 0.5% of total consolidated assets. Assets primarily consisted of United States ("U.S.") dollar-denominated monetary assets and bolivar-denominated non-monetary assets at December 31, 2017. In addition, certain of our operations in other countries sell equipment and parts that are typically denominated in U.S. dollars directly to Venezuelan customers. In addition, certain of our operations in other countries sell equipment and parts that are typically denominated in U.S. dollars directly to Venezuelan customers. In the third quarter of 2016 we recorded a charge of $73.5 million to SG&A to fully reserve for those potentially uncollectible accounts receivable (classified as other assets, net on the condensed consolidated balance sheet) and a charge to COS of $1.9 million to reserve for related net inventory exposures. We continue to pursue payments from our Venezuelan customer and in 2017 collected approximately $2 million of previously reserved accounts receivable.

Principles of Consolidation — The consolidated financial statements include the accounts of our company and our wholly and majority-owned subsidiaries. In addition, we would consolidate any variable interest entities for which we are deemed to be the primary beneficiary. Noncontrolling interests of non-affiliated parties have been recognized for all majority-owned consolidated subsidiaries. Intercompany profits/losses, transactions and balances among consolidated entities have been eliminated from our consolidated financial statements. Investments in unconsolidated affiliated companies, which represent noncontrolling ownership interests between 20% and 50%, are accounted for using the equity method, which approximates our equity interest in their underlying equivalent net book value under accounting principles generally accepted in the U.S. ("U.S. GAAP"). Investments in interests where we own less than 20% of the investee are accounted for by the cost method, whereby income is only recognized in the event of dividend receipt. Investments accounted for by the cost method are tested for impairment if an impairment indicator is present.

Use of Estimates — The process of preparing financial statements in conformity with U.S. GAAP requires us to make estimates and assumptions that affect reported amounts of certain assets, liabilities, revenues and expenses. We believe our estimates and assumptions are reasonable; however, actual results may differ materially from such estimates. The most significant estimates and assumptions are used in determining:

- Timing and amount of revenue recognition;
- Deferred taxes, tax valuation allowances and tax reserves;

- Reserves for contingent loss;
- Pension and postretirement benefits; and
- Valuation of goodwill, indefinite-lived intangible assets and other long-lived assets.

Revenue Recognition — Revenues for product sales are recognized when the risks and rewards of ownership are transferred to the customers, which is typically based on the contractual delivery terms agreed to with the customer and fulfillment of all but inconsequential or perfunctory actions. In addition, our policy requires persuasive evidence of an arrangement, a fixed or determinable sales price and reasonable assurance of collectibility. We defer the recognition of revenue when advance payments are received from customers before performance obligations have been completed and/or services have been performed. Freight charges billed to customers are included in sales and the related shipping costs are included in COS in our consolidated statements of income. Our contracts typically include cancellation provisions that require customers to reimburse us for costs incurred up to the date of cancellation, as well as any contractual cancellation penalties.

We enter into certain agreements with multiple deliverables that may include any combination of designing, developing, manufacturing, modifying, installing and commissioning of flow management equipment and providing services related to the performance of such products. Delivery of these products and services typically occurs within a one to two-year period, although many arrangements, such as "short-cycle" type orders, have a shorter timeframe for delivery. We separate deliverables into units of accounting based on whether the deliverable(s) have standalone value to the customer (impact of general rights of return is immaterial). Contract value is allocated ratably to the units of accounting in the arrangement based on their relative selling prices determined as if the deliverables were sold separately.

Revenues for long-term contracts that exceed certain internal thresholds regarding the size and duration of the project and provide for the receipt of progress billings from the customer are recorded on the percentage of completion method with progress measured on a cost-to-cost basis. Percentage of completion revenue represented approximately 4%, 5% and 7% of our consolidated sales as of December 31, 2017, 2016 and 2015, respectively.

Revenue on service and repair contracts is recognized after services have been agreed to by the customer and rendered. Revenues generated under fixed fee service and repair contracts are recognized on a ratable basis over the term of the contract. These contracts can range in duration, but generally extend for up to five years. Fixed fee service contracts represent approximately 1% of consolidated sales for each year presented.

In certain instances, we provide guaranteed completion dates under the terms of our contracts. Failure to meet contractual delivery dates can result in late delivery penalties or non-recoverable costs. In instances where the payment of such costs are deemed to be probable, we perform a project profitability analysis, accounting for such costs as a reduction of realizable revenues, which could potentially cause estimated total project costs to exceed projected total revenues realized from the project. In such instances, we would record reserves to cover such excesses in the period they are determined. In circumstances where the total projected revenues still exceed total projected costs, the incurrence of penalties or non-recoverable costs generally reduces profitability of the project at the time of subsequent revenue recognition.

Cash and Cash Equivalents — We place temporary cash investments with financial institutions and, by policy, invest in those institutions and instruments that have minimal credit risk and market risk. These investments, with an original maturity of three months or less when purchased, are classified as cash equivalents. They are highly liquid and principal values are not subject to significant risk of change due to interest rate fluctuations.

Allowance for Doubtful Accounts and Credit Risk — The allowance for doubtful accounts is established based on estimates of the amount of uncollectible accounts receivable, which is determined principally based upon the aging of the accounts receivable, but also customer credit history, industry and market segment information, economic trends and conditions and credit reports. Customer credit issues, customer bankruptcies or general economic conditions may also impact our estimates.

Credit risks are mitigated by the diversity of our customer base across many different geographic regions and industries and by performing creditworthiness analyses on our customers. Additionally, we mitigate credit risk through letters of credit and advance payments received from our customers. In 2016 we experienced increased aging and slower collection of receivables with our primary Venezuelan customer. Due to certain actions of this customer and the diminished activity of business and payments in 2016 we recorded a charge to SG&A to fully reserve for those potential uncollectible accounts receivable and a charge to COS to reserve for related net inventory exposures. We do not believe that we have any other significant concentrations of credit risk.

Inventories and Related Reserves — Inventories are stated at the lower of cost and net realizable value. Cost is determined by the first-in, first-out method. Reserves for excess and obsolete inventories are based upon our assessment of market conditions for our products determined by historical usage and estimated future demand. Due to the long life cycles of our products, we carry spare parts inventories that have historically low usage rates and provide reserves for such inventory based on demonstrated usage and aging criteria.

Income Taxes, Deferred Taxes, Tax Valuation Allowances and Tax Reserves — We account for income taxes under the asset and liability method. Deferred tax assets and liabilities are recognized for the future tax consequences attributable to differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax bases and operating loss and tax credit carryforwards. Deferred tax assets and liabilities are calculated using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. The effect on deferred tax assets and liabilities of a change in tax rates is recognized in the period that includes the enactment date. We record valuation allowances to reflect the estimated amount of deferred tax assets that may not be realized based upon our analysis of existing deferred tax assets, net operating losses and tax credits by jurisdiction and expectations of our ability to utilize these tax attributes through a review of past, current and estimated future taxable income and establishment of tax strategies.

We provide deferred taxes for the temporary differences associated with our investment in foreign subsidiaries that have a financial reporting basis that exceeds tax basis, unless we can assert permanent reinvestment in foreign jurisdictions. Financial reporting basis and tax basis differences in investments in foreign subsidiaries consist of both unremitted earnings and losses, as well as foreign currency translation adjustments.

The amount of income taxes we pay is subject to ongoing audits by federal, state, and foreign tax authorities, which often result in proposed assessments. We establish reserves for open tax years for uncertain tax positions that may be subject to challenge by various tax authorities. The consolidated tax provision and related accruals include the impact of such reasonably estimable losses and related interest and penalties as deemed appropriate.

We recognize the tax benefit from an uncertain tax position only if it is more likely than not that the tax position will be sustained on examination by the taxing authorities. The determination is based on the technical merits of the position and presumes that each uncertain tax position will be examined by the relevant taxing authority that has full knowledge of all relevant information. The tax benefits recognized in the financial statements from such a position are measured based on the largest benefit that has a greater than fifty percent likelihood of being realized upon ultimate settlement.

Legal and Environmental Contingencies — Legal and environmental reserves are recorded based upon a case-by-case analysis of the relevant facts and circumstances and an assessment of potential legal obligations and costs. Amounts relating to legal and environmental liabilities are recorded when it is probable that a loss has been incurred and such loss is estimable. Assessments of legal and environmental costs are based on information obtained from our independent and in-house experts and our loss experience in similar situations. Estimates are updated as applicable when new information regarding the facts and circumstances of each matter becomes available. Legal fees associated with legal and environmental liabilities are expensed as incurred.

Estimates of liabilities for unsettled asbestos-related claims are based on known claims and on our experience during the preceding two years for claims filed, settled and dismissed, with adjustments for events deemed unusual and unlikely to recur, and are included in retirement obligations and other liabilities in our consolidated balance sheets. A substantial majority of our asbestos-related claims are covered by insurance or indemnities. Estimated indemnities and receivables from insurance carriers for unsettled claims and receivables for settlements and legal fees paid by us for asbestos-related claims are estimated using our historical experience with insurance recovery rates and estimates of future recoveries, which include estimates of coverage and financial viability of our insurance carriers. Estimated receivables are included in other assets, net in our consolidated balance sheets. We have claims pending against certain insurers that, if resolved more favorably than estimated future recoveries, would result in discrete gains in the applicable quarter. We are currently unable to estimate the impact, if any, of unasserted asbestos-related claims, although future claims would also be subject to existing indemnities and insurance coverage.

Warranty Accruals — Warranty obligations are based upon product failure rates, materials usage, service delivery costs, an analysis of all identified or expected claims and an estimate of the cost to resolve such claims. The estimates of expected claims are generally a factor of historical claims and known product issues. Warranty obligations based on these factors are adjusted based on historical sales trends for the preceding 24 months.

Insurance Accruals — Insurance accruals are recorded for wholly or partially self-insured risks such as medical benefits and workers' compensation and are based upon an analysis of our claim loss history, insurance deductibles, policy limits and other relevant factors that are updated annually and are included in accrued liabilities in our consolidated balance sheets. The estimates are based upon information received from actuaries, insurance company adjusters, independent claims administrators or other independent sources. Receivables from insurance carriers are estimated using our historical experience with insurance recovery rates and estimates of future recoveries, which include estimates of coverage and financial viability of our insurance carriers. Estimated receivables are included in accounts receivable, net and other assets, net, as applicable, in our consolidated balance sheets.

Pension and Postretirement Obligations — Determination of pension and postretirement benefits obligations is based on estimates made by management in consultation with independent actuaries and investment advisors. Inherent in these valuations are assumptions including discount rates, expected rates of return on plan assets, retirement rates, mortality rates and rates of compensation increase and other factors all of which are reviewed annually and updated if necessary. Current market conditions, including changes in rates of return, interest rates and medical inflation rates, are considered in selecting these assumptions.

Actuarial gains and losses and prior service costs are recognized in accumulated other comprehensive loss as they arise and we amortize these costs into net pension expense over the remaining expected service period.

Property, Plant and Equipment and Depreciation — Property, plant and equipment are stated at historical cost, less accumulated depreciation. If asset retirement obligations exist, they are capitalized as part of the carrying amount of the asset and depreciated over the remaining useful life of the asset. The useful lives of leasehold improvements are the lesser of the remaining lease term or the useful life of the improvement. When assets are retired or otherwise disposed of, their costs and related accumulated depreciation are removed from the accounts and any resulting gains or losses are included in income from operations for the period. Depreciation is computed by the straight-line method based on the estimated useful lives of the depreciable assets, or in the case of assets under capital leases, over the related lease turn. Generally, the estimated useful lives of the assets are:

Buildings and improvements	10 to 40 years
Machinery, equipment and tooling	3 to 14 years
Software, furniture and fixtures and other	3 to 7 years

Costs related to routine repairs and maintenance are expensed as incurred.

Internally Developed Software — We capitalize certain costs associated with the development of internal-use software. Generally, these costs are related to significant software development projects and are amortized over their estimated useful life, typically three to five years, upon implementation of the software.

Intangible Assets — Intangible assets, excluding trademarks (which are considered to have an indefinite life), consist primarily of engineering drawings, patents, existing customer relationships, software, distribution networks and other items that are being amortized over their estimated useful lives generally ranging from four to 40 years. These assets are reviewed for impairment whenever events and circumstances indicate impairment may have occurred.

Valuation of Goodwill, Indefinite-Lived Intangible Assets and Other Long-Lived Assets — The value of goodwill and indefinite-lived intangible assets is tested for impairment as of December 31 each year or whenever events or circumstances indicate such assets may be impaired. The identification of our reporting units began at the operating segment level and considered whether components one level below the operating segment levels should be identified as reporting units for purpose of testing goodwill for impairment based on certain conditions. These conditions included, among other factors, (i) the extent to which a component represents a business and (ii) the aggregation of economically similar components within the operating segments and resulted in four reporting units. Other factors that were considered in determining whether the aggregation of components was appropriate included the similarity of the nature of the products and services, the nature of the production processes, the methods of distribution and the types of industries served.

An impairment loss for goodwill is recognized if the implied fair value of goodwill is less than the carrying value. We estimate the fair value of our reporting units based on an income approach, whereby we calculate the fair value of a reporting unit based on the present value of estimated future cash flows. A discounted cash flow analysis requires us to make various judgmental assumptions about future sales, operating margins, growth rates and discount rates, which are based on our budgets, business plans, economic projections, anticipated future cash flows and market participants. Assumptions are also made for varying perpetual growth rates for periods beyond the long-term business plan period.

We did not record an impairment of goodwill in 2017, 2016 or 2015; however, the estimated fair value of our EPO and IPD reporting units reduced significantly in 2016 and 2015 due to broad-based capital spending declines and heightened pricing pressure experienced in the oil and gas markets which are anticipated to continue in the near to mid-term. The EPO reporting unit is a component of our EPD reporting segment and is primarily focused on long lead time, custom and other highly-engineered pumps and pump systems. As of December 31, 2017, our EPO reporting unit had approximately $159 million of goodwill and its estimated fair value exceeded its carrying value by approximately 82% as compared to approximately $156 million of goodwill and its estimated fair value exceeded its carrying value by approximately 45% as of December 31, 2016. In addition, our IPD reporting unit had approximately $319 million of goodwill and its fair value exceeded its carrying value by approximately 66% as of December 31, 2017 as compared to approximately $298 million of goodwill and its fair value exceeded its carrying value by approximately 70% as of December 31, 2016. Key assumptions used in determining the estimated fair value of our EPO and IPD reporting units included the annual operating plan and forecasted operating results, successful execution of our current realignment programs and identified strategic initiatives, a constant cost of capital, continued stabilization and mid to long-term improvement of the macro-economic conditions of the oil and gas market, and a relatively stable global gross domestic product. Although we have concluded that there is no impairment on the goodwill associated with our EPO and IPD reporting units as of December 31, 2017, we will continue to closely monitor their performance and related market conditions for future indicators of potential impairment and reassess accordingly.

We also consider our market capitalization in our evaluation of the fair value of our goodwill. Our market capitalization decreased slightly as compared with 2016 and did not indicate a potential impairment of our goodwill as of December 31, 2017.

Impairment losses for indefinite-lived intangible assets are recognized whenever the estimated fair value is less than the carrying value. Fair values are calculated for trademarks using a "relief from royalty" method, which estimates the fair value of a trademark by determining the present value of estimated royalty payments that are avoided as a result of owning the trademark. This method includes judgmental assumptions about sales growth and discount rates that have a significant impact on the fair value and are substantially consistent with the assumptions used to determine the fair value of our reporting units discussed above. We did not record a material impairment of our trademarks in 2017, 2016 or 2015.

The recoverable value of other long-lived assets, including property, plant and equipment and finite-lived intangible assets, is reviewed when indicators of potential impairments are present. The recoverable value is based upon an assessment of the estimated future cash flows related to those assets, utilizing assumptions similar to those for goodwill. Additional considerations related to our long-lived assets include expected maintenance and improvements, changes in expected uses and ongoing operating performance and utilization.

Deferred Loan Costs — Deferred loan costs, consisting of fees and other expenses associated with debt financing, are amortized over the term of the associated debt using the effective interest method. Additional amortization is recorded in periods where optional prepayments on debt are made.

Fair Values of Financial Instruments — Our financial instruments are presented at fair value in our consolidated balance sheets, with the exception of our long-term debt. Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. Where available, fair value is based on observable market prices or parameters or derived from such prices or parameters. Where observable prices or inputs are not available, valuation models may be applied.

Assets and liabilities recorded at fair value in our consolidated balance sheets are categorized based upon the level of judgment associated with the inputs used to measure their fair values. Hierarchical levels, as defined by Accounting Standards Codification ("ASC") 820, "Fair Value Measurements and Disclosures," are directly related to the amount of subjectivity associated with the inputs to fair valuation of these assets and liabilities. An asset or a liability’s categorization within the fair value hierarchy is based on the lowest level of significant input to its valuation. Hierarchical levels are as follows:

Level I — Inputs are unadjusted, quoted prices in active markets for identical assets or liabilities at the measurement date.

Level II — Inputs (other than quoted prices included in Level I) are either directly or indirectly observable for the asset or liability through correlation with market data at the measurement date and for the duration of the instrument's anticipated life.

Level III — Inputs reflect management's best estimate of what market participants would use in pricing the asset or liability at the measurement date. Consideration is given to the risk inherent in the valuation technique and the risk inherent in the inputs to the model.

Recurring fair value measurements are limited to investments in derivative instruments and certain equity securities. The fair value measurements of our derivative instruments are determined using models that maximize the use of the observable market inputs including interest rate curves and both forward and spot prices for currencies, and are classified as Level II under the fair value hierarchy. The fair values of our derivative instruments are included in Note 6. The fair value measurements of our investments in equity securities are determined using quoted market prices and are classified as Level I. The fair values of our investments in equity securities, and changes thereto, are immaterial to our consolidated financial position and results of operations.

Derivatives and Hedging Activities — We have a foreign currency derivatives and hedging policy outlining the conditions under which we can enter into financial derivative transactions. We do not use derivative instruments for trading or speculative purposes. All derivative instruments are recognized on the balance sheet at their fair values.

We employ a foreign currency economic hedging strategy to mitigate certain financial risks resulting from foreign currency exchange rate movements that impact foreign currency denominated receivables and payables, firm committed transactions and forecasted sales and purchases. The changes in the fair values are recognized immediately in other income (expense), net in the consolidated statements of income. See Note 6 for further discussion of forward exchange contracts.

We are exposed to risk from credit-related losses resulting from nonperformance by counterparties to our financial instruments. We perform credit evaluations of our counterparties under forward exchange contracts and expect all counterparties to meet their obligations. If necessary, we would adjust the values of our derivative contracts for our or our counterparties' credit risks.

Foreign Currency Translation — Assets and liabilities of our foreign subsidiaries are translated to U.S. dollars at exchange rates prevailing at the balance sheet date, while income and expenses are translated at average rates for each month. Translation gains and losses are reported as a component of accumulated other comprehensive loss. Transactional currency gains and losses arising from transactions in currencies other than our sites' functional currencies are included in our consolidated results of operations.

Transaction and translation gains and losses arising from intercompany balances are reported as a component of accumulated other comprehensive loss when the underlying transaction stems from a long-term equity investment or from debt designated as not due in the foreseeable future. Otherwise, we recognize transaction gains and losses arising from intercompany transactions as a component of income. Where intercompany balances are not long-term investment related or not designated as due beyond the foreseeable future, we may mitigate risk associated with foreign currency fluctuations by entering into forward exchange contracts.

Stock-Based Compensation — Stock-based compensation is measured at the grant-date fair value. The exercise price of stock option awards and the value of restricted share, restricted share unit and performance-based unit awards (collectively referred to as "Restricted Shares") are set at the closing price of our common stock on the New York Stock Exchange on the date of grant, which is the date such grants are authorized by our Board of Directors. Restricted share units and performance-based units refer to restricted awards that do not have voting rights and accrue dividends, which are forfeited if vesting does not occur.

The intrinsic value of Restricted Shares, which is typically the product of share price at the date of grant and the number of Restricted Shares granted, is amortized on a straight-line basis to compensation expense over the periods in which the restrictions lapse based on the expected number of shares that will vest. We account for forfeitures as they occur resulting in the reversal of cumulative expense previously recognized.

Earnings Per Share — We use the two-class method of calculating Earnings Per Share ("EPS"), which determines earnings per share for each class of common stock and participating security as if all earnings for the period had been distributed. Unvested restricted share awards that earn non-forfeitable dividend rights qualify as participating securities and, accordingly, are included in the basic computation as such. Our unvested restricted shares participate on an equal basis with common shares; therefore, there is no difference in undistributed earnings allocated to each participating security. Accordingly, the presentation below is prepared on a combined basis and is presented as earnings per common share. The following is a reconciliation of net earnings of Flowserve Corporation and weighted average shares for calculating basic net earnings per common share.

Earnings per weighted average common share outstanding was calculated as follows:

	Year Ended December 31,		
	2017	2016	2015
	(Amounts in thousands, except per share data)		
Net earnings of Flowserve Corporation	$ 2,652	$ 132,455	$ 258,411
Dividends on restricted shares not expected to vest	—	6	12
Earnings attributable to common and participating shareholders	$ 2,652	$ 132,461	$ 258,423
Weighted average shares:			
Common stock	130,600	130,147	132,567
Participating securities	103	285	507
Denominator for basic earnings per common share	130,703	130,432	133,074
Effect of potentially dilutive securities	655	543	737
Denominator for diluted earnings per common share	131,358	130,975	133,811
Net earnings per share attributable to Flowserve Corporation common shareholders:			
Basic	$ 0.02	$ 1.02	$ 1.94
Diluted	0.02	1.01	1.93

Diluted earnings per share is based upon the weighted average number of shares as determined for basic earnings per share plus shares potentially issuable in conjunction with stock options, restricted share units and performance share units.

Research and Development Expense — Research and development costs are charged to expense when incurred. Aggregate research and development costs included in SG&A were $38.6 million, $42.8 million and $45.9 million in 2017, 2016 and 2015, respectively. Costs incurred for research and development primarily include salaries and benefits and consumable supplies, as well as rent, professional fees, utilities and the depreciation of property and equipment used in research and development activities.

Accounting Developments

Pronouncements Implemented

In July 2015, the Financial Accounting Standards Board ("FASB") issued ASU No. 2015-11, "Inventory (Topic 330): Simplifying the Measurement of Inventory." Previous to the issuance of this ASU, ASC 330 required that an entity measure inventory at the lower of cost or market. The amendments of ASU 2015-11 updates that "market" requirement to "net realizable value," which is defined by the ASU as the estimated selling prices in the ordinary course of business, less reasonably predictable costs of completion, disposal, and transportation. Our adoption of ASU No. 2015-11 effective January 1, 2017 did not have an impact on our consolidated financial condition and results of operations.

In March 2016, the FASB issued ASU No. 2016-09, "Compensation - Stock Compensation (Topic 718), Improvements to Employee Share-Based Payment Accounting." The ASU affects the accounting for employee share-based payment transactions as it relates to accounting for income taxes, accounting for forfeitures, and statutory tax withholding requirements. We adopted the provisions of ASU 2016-09 as of January 1, 2017. The adoption resulted in a $3.0 million one-time, cumulative adjustment to beginning retained earnings related to the change in our accounting policy from estimated forfeitures to share cancellations. Additionally, the adoption resulted in retrospective adjustments to the classification of specific items in our statement of cash flows. Specifically, we reclassified cash outflows for employee taxes paid from operating to financing and elected to reclassify the cash impacts due to excess tax deficiencies and benefits from financing to operating, which resulted in a net reclassification of cash flows used from operating to financing of approximately $12.9 million and $22.7 million for the years ended December 31, 2016 and 2015, respectively.

Pronouncements Not Yet Implemented

In May 2014, the FASB issued ASU No. 2014-09, "Revenue from Contracts with Customers (Topic 606)" which supersedes most of the revenue recognition requirements in "Revenue Recognition (Topic 605)." The standard is principle-based and provides a five-step model to determine when and how revenue is recognized. The core principle is that a company should recognize revenue when (or as) it transfers promised goods or services to customers in an amount that reflects the consideration to which the company expects to be entitled in exchange for those goods or services. Companies are permitted to adopt the new standard using one of two transition methods. Under the full retrospective method, the requirements of the new standard are applied to contracts for each prior reporting period presented and the cumulative effect of applying the standard is recognized in the earliest period presented. Under the modified retrospective method, the requirements of the new standard are applied to contracts that are open as of January 1, 2018, the required date of adoption, and the cumulative effect of applying the standard is recognized as an adjustment to beginning retained earnings in that same year. The standard also includes significantly expanded disclosure requirements for revenue. Since 2014, the FASB has issued several updates to Topic 606.

We have adopted the new revenue guidance effective January 1, 2018 using the modified retrospective method for transition, applying the guidance to those contracts which were not completed as of that date. We have developed and implemented a framework of accounting policies and practices to meet the requirements of the standard, which reflects the applicability of the key factors of the five step model, aligning our business processes, systems and controls to support compliance with the standard requirements.

To date, our assessment of our contracts with customers under the new revenue standard indicates that we will experience an increase in performance obligations satisfied “over-time,” for which the percentage of completion (“POC”) method will be used as the primary measure of progress toward satisfaction. Historically, revenue recognized under the POC method has been 5% to 10% of our consolidated sales. We estimate that the adoption of the new revenue standard and application to performance obligations satisfied after January 1, 2018 will result in revenue recognized under the POC method of approximately 30% to 40% of consolidated sales, driven primarily by contract provisions that transfer ownership overtime or cancellation provisions that require reimbursement for costs incurred plus a reasonable margin and application to more contracts under the the new revenue standard. While the Company is still in the process of final evaluation, we expect to recognize a total cumulative effect to the opening balance of retained earnings as of January 1, 2018 of approximately $20 million, mostly associated with the increase in POC revenue recognition, as a result of initially applying the standard. We also anticipate changes to the consolidated balance sheet related to accounts receivable, inventory, contract assets, accrued liabilities and contract liabilities. In addition, the adoption of the new revenue standard will significantly expand our disclosure requirements, specifically around the quantitative and qualitative information about performance obligations as it pertains to our backlog, changes in contract assets and liabilities, and disaggregation of revenue.

In January 2016, the FASB issued ASU No. 2016-01, "Financial Instruments - Overall (Subtopic 825-10): Recognition and Measurement of Financial Assets and Financial Liabilities." The ASU requires entities to measure equity investments that do not result in consolidation and are not accounted for under the equity method at fair value with changes in fair value recognized in net income. The ASU also requires an entity to present separately in other comprehensive income the portion of the total change in the fair value of a liability resulting from a change in the instrument-specific credit risk when the entity has elected to measure the liability at fair value in accordance with the fair value option for financial instruments. The requirement to disclose the method(s) and significant assumptions used to estimate the fair value for financial instruments measured at amortized cost on the balance sheet has been eliminated by this ASU. This ASU is effective for fiscal years beginning after December 15, 2017, including interim periods within those fiscal years. The adoption of of ASU No. 2016-01 is not expected to have a material impact on our consolidated financial condition and results of operations.

In February 2016, the FASB issued ASU No. 2016-02, “Leases (Topic 842)”. The ASU requires that organizations that lease assets recognize assets and liabilities on the balance sheet for the rights and obligations created by those leases. The ASU will affect the presentation of lease related expenses on the income statement and statement of cash flows and will increase the required disclosures related to leases. This ASU is effective for annual periods beginning after December 15, 2018, including interim periods within those fiscal years with early adoption permitted. We are currently evaluating the impact of ASU No. 2016-02 and all related ASUs on our consolidated financial condition and results of operations. Although we are continuing to evaluate, upon initial qualitative evaluation, we believe a key change upon adoption will be the balance sheet recognition of leased assets and liabilities. Based on our qualitative evaluation to date, we believe that any changes in income statement recognition will not be material.

In June 2016, the FASB issued ASU No. 2016-13, "Financial Instruments-Credit Losses (Topic 326), Measurement of Credit Losses on Financial Instruments." The amendments in this ASU replace the current incurred loss impairment methodology with a methodology that reflects expected credit losses and requires consideration of a broader range of reasonable and supportable information to inform credit loss estimates. This ASU is effective for fiscal years beginning after December 15, 2019, including interim periods within those fiscal years. We are currently evaluating the impact of ASU No. 2016-13 on our consolidated financial condition and results of operations.

In August 2016, the FASB issued ASU No. 2016-15, “Statement of Cash Flows (Topic 230): Classification of Certain Cash Receipts and Cash Payments - A consensus of the FASB Emerging Issues Task Force.” The update was issued with the objective of reducing the existing diversity in practice in how certain cash receipts and cash payments are presented and classified in the statement of cash flows under Topic 230 and other topics. This ASU is effective for fiscal years beginning after December 15, 2017, including interim periods within those fiscal years. The adoption of ASU No. 2016-15 is not expected to have a material impact on our consolidated statement of cash flows.

In October 2016, the FASB issued ASU No. 2016-16, "Income Taxes (Topic 740) Intra-Entity Transfers of Assets Other Than Inventory." The ASU guidance requires the recognition of the income tax consequences of an intercompany asset transfer, other than transfers of inventory, when the transfer occurs. For intercompany transfers of inventory, the income tax effects will continue to be deferred until the inventory has been sold to a third party. The ASU is effective for reporting periods beginning after December 15, 2017, with early adoption permitted. We are currently evaluating the impact of ASU No. 2016-16 on our consolidated financial condition and results of operations.

In November 2016, the FASB issued ASU No. 2016-18, "Statement of Cash Flows (Topic 230): Restricted Cash." The amendments in this ASU require that a statement of cash flows explain the change during the period in the total of cash, cash equivalents, and amounts generally described as restricted cash or restricted cash equivalents. Therefore, amounts generally described as restricted cash and restricted cash equivalents should be included with cash and cash equivalents when reconciling the beginning-of-period and end-of-period total amounts shown on the statement of cash flows. The ASU is effective for reporting periods beginning after December 15, 2017, including interim periods with those fiscal years. The adoption of ASU No. 2016-18 is not expected to have a material impact on our consolidated statement of cash flows.

In January 2017, the FASB issued ASU No. 2017-01, "Business Combinations (Topic 805): "Clarifying the Definition of a Business." The ASU clarifies the definition of a business and provides guidance on evaluating as to whether transactions should be accounted for as acquisitions (or disposals) of assets or businesses. The definition clarification as outlined in this ASU affects many areas of accounting including acquisitions, disposals, goodwill, and consolidation. The amendments of the ASU are effective for annual periods beginning after December 15, 2017, including interim periods within those annual periods. The adoption of ASU No. 2017- 01 is not expected to have a material impact on our consolidated financial condition and results of operations.

In January 2017, the FASB issued ASU No. 2017-04, "Intangibles - Goodwill and Other (Topic 350): Simplifying the Test for Goodwill Impairment." The amendments in this ASU allow companies to apply a one-step quantitative test and record the amount of goodwill impairment as the excess of a reporting unit’s carrying amount over its fair value, not to exceed the total amount of goodwill allocated to the reporting unit. The amendments of the ASU are effective for annual or interim goodwill impairment tests in fiscal years beginning after December 15, 2019. Early adoption is permitted for interim or annual goodwill impairment tests performed on testing dates after January 1, 2017. We are currently evaluating the impact of ASU No. 2017- 04 on our consolidated financial condition and results of operations.

In February 2017, the FASB issued ASU No. 2017-05, "Other Income - Gains and Losses from the Derecognition of Nonfinancial Assets (Subtopic 610-20): Clarifying the Scope of Asset Derecognition Guidance and Accounting for Partial Sales of Nonfinancial Assets." The FASB issued this ASU to clarify the scope of subtopic 610-20, which the FASB had failed to define in its issuance of ASU No. 2014-09, "Revenue from Contracts with Customers (Topic 606)." ASU No. 2017-05 will be effective concurrently with ASU No. 2014-09. Similar to ASU 2014-09, we are continuing our evaluation of ASU No. 2017-05 to determine the impact on our consolidated financial condition and results of operations.

On March 10, 2017, the FASB issued ASU No. 2017-07, "Compensation-Retirement Benefits (Topic 715): Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost." The amendments of this ASU provide additional guidance intended to improve the presentation of net benefit costs, pension costs and net periodic postretirement costs. The amendments in this ASU must be applied to annual reporting periods beginning after December

15, 2017, and to interim periods in 2018. Early adoption of the standard is permitted. The adoption of ASU No. 2017- 07 is not expected to have a material impact on our consolidated financial condition and results of operations.

On May 10, 2017, the FASB issued ASU No. 2017-09, "Compensation-Stock Compensation (Topic 718): Scope of Modification Accounting." The amendments of this ASU provide guidance about which changes to the terms or conditions of a share-based payment award require an entity to apply modification accounting in Topic 718. The amendments of the ASU must be applied to annual reporting periods beginning after December 15, 2017, including interim periods within those annual periods. The adoption of ASU No. 2017-09 is not expected to have a material impact on our consolidated financial condition and results of operations.

On August 28, 2017, the FASB issued ASU No. 2017-12, "Derivatives and Hedging (Topic 815): Targeted improvements of Accounting for Hedging Activities." The purpose of this ASU is to better align a company’s risk management activities and financial reporting for hedging relationships. Additionally, the ASU simplifies the hedge accounting requirements and improve the disclosures of hedging arrangements. The amendments of the ASU must be applied to annual reporting periods beginning after December 15, 2018, including interim periods within those annual periods. Early adoption of the standard is permitted. The adoption of ASU No. 2017-12 is not expected to have a material impact on our consolidated financial condition and results of operations.

On February 2018, the FASB issued ASU No. 2018-02, "Income Statement - Reporting Comprehensive Income (Topic 220): Reclassification of Certain Tax Effects from Accumulated Comprehensive Income (“AOCI”)." The ASU and its amendments were issued as a result of the enactment of the U.S. Tax Cuts and Jobs Act of 2017. The amendments of this ASU address the available options to reclassify stranded tax effects within AOCI to retained earnings in each period in which the effect of the change (or portion thereof) is recorded. Additionally, the ASU outlines the disclosure requirements for releasing income tax effects from AOCI. The ASU is effective for fiscal years beginning after December 15, 2018, and interim periods within those fiscal years. Early adoption is permitted. The ASU should be applied either in the period of adoption or retrospectively to each period (or periods) in which the effect of the change in the U.S. federal corporate income tax rate in the Tax Cuts and Jobs Act is recognized. We are currently evaluating the impact of ASU No. 2018-02 on our consolidated financial condition and results of operations.

2. DISPOSITIONS AND ACQUISITION

Vogt

Effective July 6, 2017, we sold our FCD's Vogt product line and related assets and liabilities to a privately held company for $28.0 million of cash received at closing. The sale resulted in a pre-tax gain of $11.1 million recorded in gain on sale of business in the consolidated statements of income. In 2016, net sales related to the Vogt business totaled approximately $17 million, with earnings before interest and taxes of approximately $4 million.

Gestra AG

Effective May 2, 2017, we sold our FCD's Gestra AG ("Gestra") business to a leading provider of steam system solutions for $203.6 million (€178.3 million), which included $180.8 million (€158.3 million) of cash received at closing (net of divested cash and subsequent working capital adjustments) and $24.0 million (€20.0 million) of previous escrow amounts collected in the fourth quarter of 2017. The sale resulted in a pre-tax gain of $130.2 million ($79.4 million after-tax) recorded in gain on sale of business in the consolidated statements of income. The sale included Gestra's manufacturing facility in Germany as well as related operations in the U.S., the United Kingdom ("U.K."), Spain, Poland, Italy, Singapore and Portugal. In 2016, Gestra recorded revenues of approximately $101 million (€92 million) with earnings before interest and taxes of approximately $17 million (€15 million).

SIHI Group B.V.

Effective January 7, 2015, we acquired for inclusion in IPD, 100% of SIHI Group B.V. ("SIHI"), a global provider of engineered vacuum and fluid pumps and related services, primarily servicing the chemical market, as well as the pharmaceutical, food & beverage and other process industries, in a stock purchase for €286.7 million ($341.5 million based on exchange rates in effect at the time the acquisition closed and net of cash acquired) in cash. The acquisition was funded using approximately $110 million in available cash and approximately $255 million in initial borrowings from our Revolving Credit Facility (as defined and discussed in Note 10), which was subsequently paid down with a portion of the net proceeds from our March 2015 offering of the 2022 EUR Senior Notes (as defined and discussed in Note 10). SIHI, based in The Netherlands, had operations primarily in Europe and, to a lesser extent, the Americas and Asia.

The excess of the acquisition date fair value of the total purchase price over the estimated fair value of the net assets was recorded as goodwill. Goodwill of $201.1 million represents the value expected to be obtained from strengthening our portfolio of products and services through the addition of SIHI's engineered vacuum and fluid pumps, as well as the associated aftermarket services and parts. The goodwill related to this acquisition is recorded in the IPD segment and is not expected to be deductible for tax purposes. Subsequent to January 7, 2015, the revenues and expenses of SIHI have been included in our consolidated statement of income. No pro forma information has been provided due to immateriality.

3. GOODWILL AND OTHER INTANGIBLE ASSETS

The changes in the carrying amount of goodwill for the years ended December 31, 2017 and 2016 are as follows:

	EPD	IPD	FCD	Total
	(Amounts in thousands)			
Balance as of January 1, 2016	$ 478,059	$ 301,116	$ 444,811	$ 1,223,986
Currency translation and other	(4,228)	(1,351)	(13,353)	(18,932)
Balance as of December 31, 2016	$ 473,831	$ 299,765	$ 431,458	$ 1,205,054
Dispositions	—	(1,900)	(36,880)	(38,780)
Currency translation and other	8,378	21,435	22,101	51,914
Balance as of December 31, 2017	$ 482,209	$ 319,300	$ 416,679	$ 1,218,188

The following table provides information about our intangible assets for the years ended December 31, 2017 and 2016:

		December 31, 2017		December 31, 2016	
	Useful Life (Years)	Ending Gross Amount	Accumulated Amortization	Ending Gross Amount	Accumulated Amortization
	(Amounts in thousands, except years)				
Finite-lived intangible assets:					
Engineering drawings(1)	10-22	$ 90,442	$ (71,761)	$ 92,135	$ (69,881)
Existing customer relationships(2)	5-10	84,291	(41,279)	78,610	(31,671)
Patents	9-16	26,876	(26,231)	26,529	(25,318)
Other	4-40	88,887	(34,251)	83,171	(30,949)
		$ 290,496	$ (173,522)	$ 280,445	$ (157,819)
Indefinite-lived intangible assets(3)		$ 94,665	$ (1,590)	$ 93,475	$ (1,573)

(1) Engineering drawings represent the estimated fair value associated with specific acquired product and component schematics.

(2) Existing customer relationships acquired prior to 2011 had a useful life of five years.

(3) Accumulated amortization for indefinite-lived intangible assets relates to amounts recorded prior to the implementation date of guidance issued in ASC 350.

The following schedule outlines actual amortization expense recognized during 2017 and an estimate of future amortization based upon the finite-lived intangible assets owned at December 31, 2017:

	Amortization Expense
	(Amounts in thousands)
Actual for year ended December 31, 2017	$ 15,324
Estimated for year ending December 31, 2018	16,649
Estimated for year ending December 31, 2019	16,127
Estimated for year ending December 31, 2020	14,620
Estimated for year ending December 31, 2021	13,099
Estimated for year ending December 31, 2022	10,934
Thereafter	45,545

Amortization expense for finite-lived intangible assets was $13.9 million in 2016 and $22.0 million in 2015.

4. INVENTORIES

Inventories, net consisted of the following:

	December 31,	
	2017	2016
	(Amounts in thousands)	
Raw materials	$ 358,827	$ 348,012
Work in process	548,250	629,766
Finished goods	215,849	206,086
Less: Progress billings	(160,044)	(216,783)
Less: Excess and obsolete reserve	(78,609)	(69,391)
Inventories, net	$ 884,273	$ 897,690

During 2017, 2016 and 2015, we recognized expenses of $22.9 million, $14.6 million and $20.2 million, respectively, for excess and obsolete inventory. These expenses are included in COS in our consolidated statements of income.

In the second quarter of 2017, we recorded a $16.9 million charge for costs incurred related to a contract to supply oil and gas platform equipment to an end user in Latin America. This charge was primarily related to our IPD reporting segment and resulted in a decrease to work in process.

5. STOCK-BASED COMPENSATION PLANS

We maintain the Flowserve Corporation Equity and Incentive Compensation Plan (the "2010 Plan"), which is a shareholder-approved plan authorizing the issuance of up to 8,700,000 shares of our common stock in the form of incentive stock options, non-statutory stock options, restricted shares, restricted share units and performance-based units (collectively referred to as "Restricted Shares"), stock appreciation rights and bonus stock. Of the 8,700,000 shares of common stock authorized under the 2010 Plan, 2,619,677 were available for issuance as of December 31, 2017. The long-term incentive program was amended to allow Restricted Shares granted after January 1, 2016 to employees who retire and have achieved at least 55 years of age and ten years of service to continue to vest over the original vesting period ("55/10 Provision").

Stock Options — Options granted to officers, other employees and directors allow for the purchase of common shares at the market value of our stock on the date the options are granted. Options generally become exercisable after three years. Options generally expire ten years from the date of the grant or within a short period of time following the termination of employment or cessation of services by an option holder. Until the second quarter of 2017, no previous stock options were outstanding. On May 4, 2017, 114,943 stock options were granted with a grant date fair value of $2.0 million, which is expected to be recognized over a weighted-average period of approximately two years. No options were granted during years ending December 31, 2016 or 2015. No stock options vested during 2017, 2016 or 2015.

Information related to stock options issued to officers, other employees and directors under all plans is presented in the following table:

	2017		2016		2015	
	Shares	Weighted Average Exercise Price	Shares	Weighted Average Exercise Price	Shares	Weighted Average Exercise Price
Number of shares under option:						
Outstanding — beginning of year	—	$ —	84,261	$ 17.42	97,962	$ 16.61
Granted	114,943	48.63	—	—	—	—
Exercised	—	—	(84,261)	17.42	(13,701)	11.66
Canceled	—	—	—	—	—	—
Outstanding — end of year	114,943	$ 48.63	—	$ —	84,261	$ 17.42
Exercisable — end of year	—	$ —	—	$ —	84,261	$ 17.42

The weighted average remaining contractual life of options outstanding at December 31, 2017 was 9.3 years. The weighted average remaining contractual life of options outstanding at December 31, 2015 was one year. The total intrinsic value of stock options exercised was $2.4 million and $1.0 million for the periods ended December 31, 2016 and 2015, respectively.

Restricted Shares — Generally, the restrictions on Restricted Shares do not expire for a minimum of one year and a maximum of three years, and shares are subject to forfeiture during the restriction period. Most typically, Restricted Share grants have staggered vesting periods over one to three years from grant date. The intrinsic value of the Restricted Shares, which is typically the product of share price at the date of grant and the number of Restricted Shares granted, is amortized on a straight-line basis to compensation expense over the periods in which the restrictions lapse.

Awards of Restricted Shares are valued at the closing market price of our common stock on the date of grant. The unearned compensation is amortized to compensation expense over the vesting period of the restricted shares, except for awards related to the 55/10 Provision which are expensed when granted. Unearned compensation is amortized to compensation expense over the vesting period of the Restricted Shares. As of December 31, 2017 and 2016, we had $16.7 million and $15.2 million, respectively, of unearned compensation cost related to unvested Restricted Shares, which is expected to be recognized over a weighted-average period of approximately one year. These amounts will be recognized into net earnings in prospective periods as the awards vest. The total fair value of Restricted Shares vested during the years ended December 31, 2017, 2016 and 2015 was $30.5 million, $38.8 million and $41.3 million, respectively.

We recorded stock-based compensation for Restricted Shares as follows:

	Year Ended December 31,		
	2017	2016	2015
	(Amounts in millions)		
Stock-based compensation expense	$ 22.8	$ 30.2	$ 34.8
Related income tax benefit	(5.2)	(10.4)	(11.8)
Net stock-based compensation expense	$ 17.6	$ 19.8	$ 23.0

The following table summarizes information regarding Restricted Shares:

	Year Ended December 31, 2017	
	Shares	Weighted Average Grant-Date Fair Value
Number of unvested Restricted Shares:		
Outstanding — beginning of year	1,259,275	$ 50.77
Granted	692,819	49.20
Vested	(523,529)	58.28
Canceled	(224,713)	48.05
Outstanding — ending of year	1,203,852	$ 47.10

Unvested Restricted Shares outstanding as of December 31, 2017, includes approximately 830,000 units with performance-based vesting provisions. Performance-based units are issuable in common stock and vest upon the achievement of pre-defined performance targets. Performance-based units granted prior to 2017 have performance targets based on our average annual return on net assets over a three-year period as compared with the same measure for a defined peer group for the same period. Performance-based units granted in 2017 have performance targets based on our average return on invested capital and our total shareholder return ("TSR") over a three-year period as compared with the same measures for a defined peer group for the same period. Most performance units were granted in three annual grants since January 1, 2015 and have a vesting percentage between 0% and 200% depending on the achievement of the specific performance targets. Except for shares granted under the 55/10 Provision, compensation expense is recognized ratably over a cliff-vesting period of 36 months based on the fair value of our common stock on the date of grant, as adjusted for actual forfeitures. During the performance period, earned and unearned compensation expense is adjusted based on changes in the expected achievement of the performance targets for all performance-based units granted except for the TSR-based units. Vesting provisions range from 0 to approximately 1,637,000 shares based on performance targets. As of December 31, 2017, we estimate vesting of approximately 565,000 shares based on expected achievement of performance targets.

6. DERIVATIVES AND HEDGING ACTIVITIES

Our risk management and foreign currency derivatives and hedging policy specifies the conditions under which we may enter into derivative contracts. See Note 1 for additional information on our purpose for entering into derivatives and our overall risk management strategies. We enter into foreign exchange forward contracts to hedge our cash flow risks associated with transactions denominated in currencies other than the local currency of the operation engaging in the transaction.

During the second quarter of 2017, we discontinued our program to designate forward exchange contracts. The discontinuance of this program had no impact on our financial position as of December 31, 2017. Foreign exchange contracts not designated as hedging instruments had notional values of $235.6 million and $393.2 million at December 31, 2017 and 2016, respectively. At December 31, 2017, the length of foreign exchange contracts currently in place ranged from 4 days to 24 months.

We are exposed to risk from credit-related losses resulting from nonperformance by counterparties to our financial instruments. We perform credit evaluations of our counterparties under forward exchange contracts and expect all counterparties to meet their obligations. We have not experienced credit losses from our counterparties.

The fair values of foreign exchange contracts are summarized below:

	Year Ended December 31,	
	2017	2016
	(Amounts in thousands)	
Current derivative assets	$ 2,489	$ 682
Noncurrent derivative assets	177	—
Current derivative liabilities	284	6,878
Noncurrent derivative liabilities	56	355

Current and noncurrent derivative assets are reported in our consolidated balance sheets in prepaid expenses and other and other assets, net, respectively. Current and noncurrent derivative liabilities are reported in our consolidated balance sheets in accrued liabilities and retirement obligations and other liabilities, respectively.

The impact of net changes in the fair values of foreign exchange contracts are summarized below:

	Year Ended December 31,		
	2017	2016	2015
	(Amounts in thousands)		
Gain recognized in income	$ 2,122	$ 5,693	$ 23,900

Gains and losses recognized in our consolidated statements of income for foreign exchange contracts are classified as Other (expense) income, net.

In March 2015, we designated €255.7 million of our €500.0 million 2022 EUR Senior Notes discussed in Note 10 as a net investment hedge of our investments in certain of our international subsidiaries that use the Euro as their functional currency. We used the spot method to measure the effectiveness of our net investment hedge. Under this method, for each reporting period, the change in the carrying value of the 2022 EUR Senior Notes due to remeasurement of the effective portion is reported in accumulated other comprehensive loss on our consolidated balance sheet and the remaining change in the carrying value of the ineffective portion, if any, is recognized in Other (expense) income, net in our consolidated statements of income. We evaluate the effectiveness of our net investment hedge on a prospective basis at the beginning of each quarter. We did not record any ineffectiveness for the year ended December 31, 2017.

7. FAIR VALUE OF FINANCIAL INSTRUMENTS

The fair value of our debt, excluding the Senior Notes (as described in Note 10), was estimated using interest rates on similar debt recently issued by companies with credit metrics similar to ours and is classified as Level II under the fair value hierarchy. The carrying value of our debt is included in Note 10 and, except for the Senior Notes, approximates fair value. The estimated fair value of the Senior Notes is based on Level I quoted market rates. The estimated fair value of our Senior Notes at December 31, 2017 was $1,402.4 million compared to the carrying value of $1,388.6 million. The carrying amounts of our other financial instruments (i.e., cash and cash equivalents, accounts receivable, net and accounts payable) approximated fair value due to their short-term nature at December 31, 2017 and December 31, 2016.

8. DETAILS OF CERTAIN CONSOLIDATED BALANCE SHEET CAPTIONS

The following tables present financial information of certain consolidated balance sheet captions.

Accounts Receivable, net — Accounts receivable, net were:

	December 31,	
	2017	2016
	(Amounts in thousands)	
Accounts receivable	$ 915,824	$ 934,558
Less: allowance for doubtful accounts	(59,113)	(51,920)
Accounts receivable, net	$ 856,711	$ 882,638

Property, Plant and Equipment, net — Property, plant and equipment, net were:

	December 31,	
	2017	2016
	(Amounts in thousands)	
Land	$ 84,551	$ 81,022
Buildings and improvements	470,354	442,756
Machinery, equipment and tooling	682,316	669,639
Software, furniture and fixtures and other	402,608	413,540
Gross property, plant and equipment(1)	1,639,829	1,606,957
Less: accumulated depreciation	(968,033)	(882,152)
Property, plant and equipment, net	$ 671,796	$ 724,805

(1) Adjusted by $26.0 million impairment charge in second quarter of 2017 related to our manufacturing facility in Brazil.

Accrued Liabilities — Accrued liabilities were:

	December 31,	
	2017	2016
	(Amounts in thousands)	
Wages, compensation and other benefits	$ 180,717	$ 148,481
Commissions and royalties	23,240	27,767
Customer advance payments	273,127	253,325
Progress billings in excess of accumulated costs	4,411	7,052
Warranty costs and late delivery penalties	53,027	48,946
Sales and use tax	14,830	14,969
Income tax	27,862	15,755
Other	146,982	164,691
Accrued liabilities	$ 724,196	$ 680,986

"Other" accrued liabilities include professional fees, lease obligations, insurance, interest, freight, accrued cash dividends payable, legal and environmental matters, derivative liabilities, restructuring reserves and other items, none of which individually exceed 5% of current liabilities.

Retirement Obligations and Other Liabilities — Retirement obligations and other liabilities were:

	December 31,	
	2017	2016
	(Amounts in thousands)	
Pension and postretirement benefits	$ 203,640	$ 216,772
Deferred taxes	156,276	20,086
Legal and environmental	25,996	32,546
Uncertain tax positions and other tax liabilities	72,711	93,524
Other	38,331	44,911
Retirement obligations and other liabilities	$ 496,954	$ 407,839

9. EQUITY METHOD INVESTMENTS

We occasionally enter into joint venture arrangements with local country partners as our preferred means of entry into countries where barriers to entry may exist. Similar to our consolidated subsidiaries, these unconsolidated joint ventures generally operate within our primary businesses of designing, manufacturing, assembling and distributing fluid motion and control products and services. We have agreements with certain of these joint ventures that restrict us from otherwise entering the respective market and certain joint ventures produce and/or sell our products as part of their broader product offering. Net earnings from investments in unconsolidated joint ventures is reported in net earnings from affiliates in our consolidated statements of income. Given the integrated role of the unconsolidated joint ventures in our business, net earnings from affiliates is presented as a component of operating income.

As of December 31, 2017, we had investments in seven joint ventures (one located in each of Chile, India, Saudi Arabia, South Korea and the United Arab Emirates and two located in China) that were accounted for using the equity method and are immaterial for disclosure purposes.

10. DEBT AND LEASE OBLIGATIONS

Debt, including capital lease obligations, consisted of:

	December 31,	
	2017	2016
	(Amounts in thousands)	
1.25% EUR Senior Notes due March 17, 2022, net of unamortized discount and debt issuance costs of $5,335 and $5,748 at December 31, 2017 and 2016, respectively	$ 594,465	$ 519,902
4.00% USD Senior Notes due November 15, 2023, net of unamortized discount and debt issuance costs of $2,590 and $2,972 at December 31, 2017 and 2016, respectively	297,410	297,028
3.50% USD Senior Notes due September 15, 2022, net of unamortized discount and debt issuance costs of $3,230 and $3,848 at December 31, 2017 and 2016, respectively	496,770	496,152
Term Loan Facility, interest rate of 3.19% and 2.25% at December 31, 2017 and 2016, net of debt issuance costs of $585 and $745, respectively	164,415	224,255
Capital lease obligations and other borrowings	22,197	33,286
Debt and capital lease obligations	1,575,257	1,570,623
Less amounts due within one year	75,599	85,365
Total debt due after one year	$ 1,499,658	$ 1,485,258

Scheduled maturities of the Senior Credit Facility (as described below), as well as our Senior Notes and other debt, are:

	Term Loan	Senior Notes and other debt	Total
	(Amounts in thousands)		
2018	$ 60,000	$ 15,599	$ 75,599
2019	59,468	6,598	66,066
2020	44,947	—	44,947
2021	—	—	—
2022	—	1,091,235	1,091,235
Thereafter	—	297,410	297,410
Total	$ 164,415	$ 1,410,842	$ 1,575,257

Senior Notes

On March 17, 2015, we completed a public offering of €500.0 million of Euro senior notes in aggregate principal amount due March 17, 2022 ("2022 EUR Senior Notes"). The 2022 EUR Senior Notes bear an interest rate of 1.25% per year, payable each year on March 17. The 2022 EUR Senior Notes were priced at 99.336% of par value, reflecting a discount to the aggregate principal amount. The proceeds of the offering were €496.7 million ($526.3 million based on exchange rates in effect at the time the offering closed). We used a portion of the proceeds of the 2022 EUR Senior Notes to ultimately fund the acquisition of SIHI described in Note 2 and utilized the remaining portion for other general corporate purposes.

On November 1, 2013 we completed the public offering of $300.0 million in aggregate principal amount of senior notes due November 15, 2023 ("2023 Senior Notes"). The 2023 Senior Notes bear an interest rate of 4.00% per year, payable on May 15 and November 15 of each year. The 2023 Senior Notes were priced at 99.532% of par value, reflecting a discount to the aggregate principal amount.

On September 11, 2012, we completed the public offering of $500.0 million in aggregate principal amount of senior notes due September 15, 2022 ("2022 Senior Notes"). The 2022 Senior Notes bear an interest rate of 3.50% per year, payable on March 15 and September 15 of each year. The 2022 Senior Notes were priced at 99.615% of par value, reflecting a discount to the aggregate principal amount.

We have the right to redeem the 2022 Senior Notes and 2023 Senior Notes at any time prior to June 15, 2022 and August 15, 2023, respectively, in whole or in part, at our option, at a redemption price equal to the greater of: (1) 100% of the principal amount of the senior notes being redeemed; or (2) the sum of the present values of the remaining scheduled payments of principal and interest in respect of the Senior Notes being redeemed discounted to the redemption date on a semi-annual basis, at the applicable Treasury Rate plus 30 basis points for the 2022 Senior Notes and plus 25 basis points for the 2023 Senior Notes. In addition, at any time on or after June 15, 2022 for the 2022 Senior Notes and August 15, 2023 for the 2023 Senior Notes, we may redeem the Senior Notes at a redemption price equal to 100% of the principal amount of the Senior Notes being redeemed. In each case, we will also pay the accrued and unpaid interest on the principal amount being redeemed to the redemption date. Similarly, we have the right to redeem the 2022 EUR Senior Notes on or after December 17, 2021, in whole or in part, at our option, at a redemption price equal to the greater of: (1) 100% of the principal amount of the senior notes being redeemed; or (2) the sum of the present values of the remaining scheduled payments of principal and interest in respect of the Senior Notes being redeemed (exclusive of interest accrued to, but excluding, the date of redemption) discounted to the redemption date on an annual basis, at the Comparable German Government Bond Rate plus 25 basis points.

Senior Credit Facility

Our credit agreement provides for an initial $400.0 million term loan (“Term Loan Facility”) and a $1.0 billion revolving credit facility (“Revolving Credit Facility” and, together with the Term Loan Facility, the “Senior Credit Facility”) with a maturity of October 14, 2020. On June 30, 2017, we amended our existing Senior Credit Facility. The amendment, among other changes, includes the following: (i) a decrease of the Revolving Credit Facility commitment from $1.0 billion to $800 million, (ii) an increase of the leverage ratio from 3.50 to 4.00 times debt to total Consolidated EBITDA through June 30, 2019, with a step-down to 3.75 for any fiscal quarter ending after July 1, 2019, (iii) the addition of a new pricing level on our senior unsecured long-term debt ratings for Ba2/BB, with an increase in interest rate margin for LIBOR loans to 2.00% and for base rate loans to 1.00% and (iv) a revision to the restrictions on the ability to incur debt by decreasing the maximum principal amount of priority debt allowed from 15% to 7.5% of the consolidated tangible assets and a decrease on the maximum amount of receivables that could be securitized from $200 million to $100 million. Subject to certain conditions, we have the right to increase the amount of the Term Loan Facility or the Revolving Credit Facility by an aggregate amount not to exceed $400.0 million. All other material terms and conditions under the Senior Credit Facility remained unchanged.

As of December 31, 2017 and December 31, 2016, we had no revolving loans outstanding under the Revolving Credit Facility. We had outstanding letters of credit of $94.8 million and $102.6 million at December 31, 2017 and December 31, 2016, respectively, which together with financial covenant limitations based on the terms of our Senior Credit Facility, contributed to the reduction of our borrowing capacity to $644.8 million and $553.5 million, respectively. The Senior Credit Facility contains, among other things, covenants defining our and our subsidiaries' ability to dispose of assets, merge, pay dividends, repurchase or redeem capital stock and indebtedness, incur indebtedness and guarantees, create liens, enter into agreements with negative pledge clauses, make certain investments or acquisitions, enter into transactions with affiliates or engage in any business activity other than our existing business. Our compliance with these financial covenants under the Senior Credit Facility is tested quarterly. We were in compliance with the covenants as of December 31, 2017.

Repayment of Obligations —We may prepay loans under our Senior Credit Facility in whole or in part, without premium or penalty, at any time. A commitment fee, which is payable quarterly on the daily unused portions of the Senior Credit Facility, was 0.20% (per annum) at December 31, 2017. We made scheduled principal repayments under our Term Loan Facility of $60.0 million in both 2017 and 2016 and $45.0 million in 2015. We have scheduled principal repayments of $15.0 million due in each of the next four quarters of 2018 under our Term Loan Facility.

Operating Leases

We have non-cancellable operating leases for certain offices, service and quick response centers, certain manufacturing and operating facilities, machinery, equipment and automobiles. Rental expense relating to operating leases was $54.9 million, $54.7 million and $53.1 million in 2017, 2016 and 2015, respectively.

The future minimum lease payments due under non-cancellable operating leases are (amounts in thousands):

Year Ended December 31,	
2018	$ 51,652
2019	37,452
2020	28,801
2021	22,589
2022	21,003
Thereafter	71,672
Total minimum lease payments	$ 233,169

11. PENSION AND POSTRETIREMENT BENEFITS

We sponsor several noncontributory defined benefit pension plans, covering substantially all U.S. employees and certain non-U.S. employees, which provide benefits based on years of service, age, job grade levels and type of compensation. Retirement benefits for all other covered employees are provided through contributory pension plans, cash balance pension plans and government-sponsored retirement programs. All funded defined benefit pension plans receive funding based on independent actuarial valuations to provide for current service and an amount sufficient to amortize unfunded prior service over periods not to exceed 30 years, with funding falling within the legal limits prescribed by prevailing regulation. We also maintain unfunded defined benefit plans that, as permitted by local regulations, receive funding only when benefits become due.

Our defined benefit plan strategy is to ensure that current and future benefit obligations are adequately funded in a cost-effective manner. Additionally, our investing objective is to achieve the highest level of investment performance that is compatible with our risk tolerance and prudent investment practices. Because of the long-term nature of our defined benefit plan liabilities, our funding strategy is based on a long-term perspective for formulating and implementing investment policies and evaluating their investment performance.

The asset allocation of our defined benefit plans reflects our decision about the proportion of the investment in equity and fixed income securities, and, where appropriate, the various sub-asset classes of each. At least annually, we complete a comprehensive review of our asset allocation policy and the underlying assumptions, which includes our long-term capital markets rate of return assumptions and our risk tolerances relative to our defined benefit plan liabilities.

The expected rates of return on defined benefit plan assets are derived from review of the asset allocation strategy, expected long-term performance of asset classes, risks and other factors adjusted for our specific investment strategy. These rates are impacted by changes in general market conditions, but because they are long-term in nature, short-term market changes do not significantly impact the rates.

Our U.S. defined benefit plan assets consist of a balanced portfolio of equity and fixed income securities. Our non-U.S. defined benefit plan assets include a significant concentration of United Kingdom ("U.K.") fixed income securities. We monitor investment allocations and manage plan assets to maintain acceptable levels of risk.

For all periods presented, we used a measurement date of December 31 for each of our U.S. and non-U.S. pension plans and postretirement medical plans.

U.S. Defined Benefit Plans

We maintain qualified and non-qualified defined benefit pension plans in the U.S. The qualified plan provides coverage for substantially all full-time U.S. employees who receive benefits, up to an earnings threshold specified by the U.S. Department of Labor. The non-qualified plans primarily cover a small number of employees including current and former members of senior management, providing them with benefit levels equivalent to other participants, but that are otherwise limited by U.S. Department of Labor rules. The U.S. plans are designed to operate as "cash balance" arrangements, under which the employee has the option to take a lump sum payment at the end of their service. The total accumulated benefit obligation is equivalent to the total projected benefit obligation ("Benefit Obligation").

The following are assumptions related to the U.S. defined benefit pension plans:

	Year Ended December 31,		
	2017	2016	2015
Weighted average assumptions used to determine Benefit Obligations:			
Discount rate	3.63%	4.00%	4.75%
Rate of increase in compensation levels	4.01	4.00	4.00
Weighted average assumptions used to determine net pension expense:			
Long-term rate of return on assets	6.00%	6.00%	6.25%
Discount rate	4.00	4.75	4.00
Rate of increase in compensation levels	4.01	4.00	4.25

At December 31, 2017 as compared with December 31, 2016, we decreased our discount rate from 4.00% to 3.63% based on an analysis of publicly-traded investment grade U.S. corporate bonds, which had a lower yield due to current market conditions. In determining 2017 expense, the expected rate of return on U.S. plan assets remained constant at 6.00%, primarily based on our target allocations and expected long-term asset returns. The long-term rate of return assumption is calculated using a quantitative approach that utilizes unadjusted historical returns and asset allocation as inputs for the calculation. For all U.S. plans, we adopted the RP-2006 mortality tables and the MP-2017 improvement scale published in October 2017. We applied the RP-2006 tables based on the constituency of our plan population for union and non-union participants. We adjusted the improvement scale to utilize 75% of the ultimate improvement rate, consistent with assumptions adopted by the Social Security Administration trustees, based on long-term historical experience. Currently, we believe this approach provides the best estimate of our future obligation. Most plan participants elect to receive plan benefits as a lump sum at the end of service, rather than an annuity. As such, the updated mortality tables had an immaterial effect on our pension obligation.

Net pension expense for the U.S. defined benefit pension plans (including both qualified and non-qualified plans) was:

	Year Ended December 31,		
	2017	2016	2015
	(Amounts in thousands)		
Service cost	$ 22,257	$ 22,583	$ 24,113
Interest cost	16,878	19,072	17,072
Expected return on plan assets	(24,505)	(23,997)	(24,185)
Settlement (gain) loss	(216)	91	—
Amortization of unrecognized prior service cost	112	488	509
Amortization of unrecognized net loss	6,021	4,999	9,178
U.S. net pension expense	$ 20,547	$ 23,236	$ 26,687

The estimated prior service cost and the estimated net loss for the U.S. defined benefit pension plans that will be amortized from accumulated other comprehensive loss into pension expense in 2018 is $0.2 million and $5.5 million, respectively. We amortize estimated prior service benefits and estimated net losses over the remaining expected service period.

The following summarizes the net pension liability for U.S. plans:

	December 31,	
	2017	2016
	(Amounts in thousands)	
Plan assets, at fair value	$ 464,779	$ 418,854
Benefit Obligation	(461,355)	(449,601)
Funded status	$ 3,424	$ (30,747)

The following summarizes amounts recognized in the balance sheet for U.S. plans:

	December 31,	
	2017	2016
	(Amounts in thousands)	
Noncurrent assets	$ 10,853	$ —
Current liabilities	(459)	(273)
Noncurrent liabilities	(6,970)	(30,474)
Funded status	$ 3,424	$ (30,747)

The following is a summary of the changes in the U.S. defined benefit plans' pension obligations:

	2017	2016
	(Amounts in thousands)	
Balance — January 1	$ 449,601	$ 426,248
Service cost	22,257	22,583
Interest cost	16,878	19,072
Plan amendments and settlements	(3,006)	(3,221)
Actuarial loss (1)	9,404	22,706
Benefits paid	(33,779)	(37,787)
Balance — December 31	$ 461,355	$ 449,601
Accumulated benefit obligations at December 31	$ 461,355	$ 449,601

(1) The actuarial losses in 2017 and 2016 primarily reflect the impact of changes in the discount rate.

The following table summarizes the expected cash benefit payments for the U.S. defined benefit pension plans in the future (amounts in millions):

2018	$ 39.5
2019	39.5
2020	40.7
2021	44.3
2022	42.3
2023-2027	202.9

The following table shows the change in accumulated other comprehensive loss attributable to the components of the net cost and the change in Benefit Obligations for U.S. plans, net of tax:

	2017	2016
	(Amounts in thousands)	
Balance — January 1	$ (69,132)	$ (61,647)
Amortization of net loss	3,766	3,136
Amortization of prior service cost	70	306
Net gain (loss) arising during the year	16,009	(11,618)
Settlement (gain) loss	(135)	57
Prior service (cost) benefit arising during the year	(368)	634
Balance — December 31	$ (49,790)	$ (69,132)

Amounts recorded in accumulated other comprehensive loss consist of:

	December 31,	
	2017	2016
	(Amounts in thousands)	
Unrecognized net loss	$ (48,825)	$ (68,476)
Unrecognized prior service cost	(965)	(656)
Accumulated other comprehensive loss, net of tax	$ (49,790)	$ (69,132)

The following is a reconciliation of the U.S. defined benefit pension plans' assets:

	2017	2016
	(Amounts in thousands)	
Balance — January 1	$ 418,854	$ 408,218
Return on plan assets	59,462	28,182
Company contributions	23,836	22,450
Benefits paid	(33,779)	(37,787)
Settlements	(3,594)	(2,209)
Balance — December 31	$ 464,779	$ 418,854

We contributed $23.8 million and $22.5 million to the U.S. defined benefit pension plans during 2017 and 2016, respectively. These payments exceeded the minimum funding requirements mandated by the U.S. Department of Labor rules. Our estimated contribution in 2018 is expected to be approximately $20 million, excluding direct benefits paid.

All U.S. defined benefit plan assets are held by the qualified plan. The asset allocations for the qualified plan at the end of 2017 and 2016 by asset category, are as follows:

	Target Allocation at December 31,		Percentage of Actual Plan Assets at December 31,	
Asset category	**2017**	**2016**	**2017**	**2016**
Cash and cash equivalents	—%	—%	1%	—%
U.S. Large Cap	—%	19%	—%	20%
U.S. Small Cap	—%	4%	—%	4%
International Large Cap	—%	14%	—%	14%
Emerging Markets	—%	5%	—%	5%
World Equity	—%	8%	—%	8%
Global Equity	36%	—%	36%	—%
Global Real Assets	12%	—%	12%	—%
Equity securities	48%	50%	48%	51%
Diversified Credit	12%	—%	12%	—%
Liability Driven Investment	40%	40%	39%	39%
Long-Term Government / Credit	—%	10%	—%	10%
Fixed income	52%	50%	51%	49%

None of our common stock is directly held by our qualified plan. Our investment strategy is to earn a long-term rate of return consistent with an acceptable degree of risk and minimize our cash contributions over the life of the plan, while taking into account the liquidity needs of the plan. We preserve capital through diversified investments in high quality securities. Our current allocation target is to invest approximately 48% of plan assets in equity securities and 52% in fixed income securities. Within each investment category, assets are allocated to various investment strategies. Professional money management firms manage our assets, and we engage a consultant to assist in evaluating these activities. We periodically review the allocation target, generally in conjunction with an asset and liability study and in consideration of our future cash flow needs. We regularly rebalance the actual allocation to our target investment allocation.

Plan assets are invested in commingled funds. Our "Pension and Investment Committee" is responsible for setting the investment strategy and the target asset allocation for the plan's assets. As the qualified plan approached fully funded status, we implemented a Liability-Driven Investing ("LDI") strategy, which more closely aligns the duration of the plan's assets with the duration of its liabilities. The LDI strategy results in an asset portfolio that more closely matches the behavior of the liability, thereby reducing the volatility of the plan's funded status.

The plan's financial instruments, shown below, are presented at fair value. See Note 1 for further discussion on how the hierarchical levels of the fair values of the Plan's investments are determined. The fair values of our U.S. defined benefit plan assets were:

	At December 31, 2017				At December 31, 2016			
		Hierarchical Levels				Hierarchical Levels		
	Total	I	II	III	Total	I	II	III
	(Amounts in thousands)				(Amounts in thousands)			
Cash and cash equivalents	$ 5,494	$ 5,494	$ —	$ —	$ 848	$ 848	$ —	$ —
Commingled Funds:								
Equity securities								
U.S. Large Cap(a)	—	—	—	—	81,953	—	81,953	—
U.S. Small Cap(b)	—	—	—	—	17,738	—	17,738	—
International Large Cap(c)	—	—	—	—	59,435	—	59,435	—
Emerging Markets(d)	—	—	—	—	20,014	—	20,014	—
World Equity(e)	—	—	—	—	34,261	—	34,261	—
Global Equity(f)	167,336	—	167,336	—	—	—	—	—
Global Real Assets(g)	55,261	—	55,261	—	—	—	—	—
Fixed income securities								
Diversified Credit(h)	55,440	—	55,440	—	—	—	—	—
Liability Driven Investment (i)	181,248	—	181,248	—	164,384	—	164,384	—
Long-Term Government/Credit(j)	—	—	—	—	40,221	—	40,221	—
	$ 464,779	$ 5,494	$ 459,285	$ —	$ 418,854	$ 848	$ 418,006	$ —

(a) U.S. Large Cap funds seek to outperform the Russell 1000 (R) Index with investments in large and medium capitalization U.S. companies represented in the Russell 1000 (R) Index, which is composed of the largest 1,000 U.S. equities as determined by market capitalization.

(b) U.S. Small Cap funds seek to outperform the Russell 2000 (R) Index with investments in medium and small capitalization U.S. companies represented in the Russell 2000 (R) Index, which is composed of the smallest 2,000 U.S. equities as determined by market capitalization.

(c) International Large Cap funds seek to outperform the MSCI Europe, Australia, and Far East Index with investments in most of the developed nations of the world so as to maintain a high degree of diversification among countries and currencies.

(d) Emerging Markets funds represent a diversified portfolio that seeks high, long-term returns comparable to investments in emerging markets by investing in stocks from newly developed emerging market economies.

(e) World Equity funds seek to outperform the Russell Developed Large Cap Index Net over a full market cycle. The fund's goal is to provide a favorable total return relative to the benchmark, primarily through long-term capital appreciation.

(f) Global Equity fund seeks to closely track the performance of the MSCI All Country World Index.

(g) Global Real Asset funds seek to provide exposure to the listed global real estate investment trusts (REITs) and infrastructure markets.

(h) Diversified Credit funds seek to provide exposure to the high yield, emerging markets, bank loans, and securitized credit markets.

(i) LDI funds seek to invest in high quality fixed income securities that closely match those found in discount curves used to value the plan's liabilities.

(j) Long-Term Government/Credit funds seek to outperform the Bloomberg Barclays Capital U.S. Long-Term Government/Credit Index by generating excess return through a variety of diversified strategies in securities with longer durations, such as sector rotation, security selection and tactical use of high-yield bonds.

Non-U.S. Defined Benefit Plans

We maintain defined benefit pension plans, which cover some or all of our employees in the following countries: Austria, Belgium, Canada, France, Germany, India, Italy, Mexico, The Netherlands, Sweden, Switzerland and the U.K. The assets in the U.K. (two plans), The Netherlands and Canada represent 94% of the total non-U.S. plan assets ("non-U.S. assets"). Details of other countries’ plan assets have not been provided due to immateriality.

The following are assumptions related to the non-U.S. defined benefit pension plans:

	Year Ended December 31,		
	2017	2016	2015
Weighted average assumptions used to determine Benefit Obligations:			
Discount rate	2.25%	2.34%	3.13%
Rate of increase in compensation levels	3.25	3.22	3.61
Weighted average assumptions used to determine net pension expense:			
Long-term rate of return on assets	3.88%	4.68%	5.03%
Discount rate	2.34	3.13	3.40
Rate of increase in compensation levels	3.22	3.61	3.95

At December 31, 2017 as compared with December 31, 2016, we decreased our average discount rate for non-U.S. plans from 2.34% to 2.25% based on analysis of bonds and other publicly-traded instruments, by country, which had lower yields due to market conditions. To determine 2017 pension expense, we decreased our average expected rate of return on plan assets from 4.68% at December 31, 2016 to 3.88% at December 31, 2017, primarily based on our target allocations and expected long-term asset returns. As the expected rate of return on plan assets is long-term in nature, short-term market changes do not significantly impact the rate.

Many of our non-U.S. defined benefit plans are unfunded, as permitted by local regulation. The expected long-term rate of return on assets for funded plans was determined by assessing the rates of return for each asset class and is calculated using a quantitative approach that utilizes unadjusted historical returns and asset allocation as inputs for the calculation. We work with our actuaries to determine the reasonableness of our long-term rate of return assumptions by looking at several factors including historical returns, expected future returns, asset allocation, risks by asset class and other items.

Net pension expense for non-U.S. defined benefit pension plans was:

	Year Ended December 31,		
	2017	2016	2015
	(Amounts in thousands)		
Service cost	$ 7,247	$ 7,131	$ 7,832
Interest cost	9,320	11,623	11,770
Expected return on plan assets	(8,834)	(10,013)	(11,693)
Amortization of unrecognized net loss	3,741	4,751	4,949
Amortization of unrecognized prior service (benefit) cost	(4)	4	(12)
Settlement loss and other	2,434	780	570
Non-U.S. net pension expense	$ 13,904	$ 14,276	$ 13,416

In 2018, there is no significant estimated prior service cost that will be amortized from accumulated other comprehensive loss into pension expense for the non-U.S. defined benefit pension plans. The estimated net loss for the non-U.S. defined benefit pension plans that will be amortized from accumulated other comprehensive loss into pension expense in 2018 is $3.7 million. We amortize estimated net losses over the remaining expected service period or over the remaining expected lifetime of inactive participants for plans with only inactive participants.

The following summarizes the net pension liability for non-U.S. plans:

	December 31,	
	2017	2016
	(Amounts in thousands)	
Plan assets, at fair value	$ 248,733	$ 223,491
Benefit Obligation	(413,960)	(383,947)
Funded status	$ (165,227)	$ (160,456)

The following summarizes amounts recognized in the balance sheet for non-U.S. plans:

	December 31,	
	2017	2016
\	(Amounts in thousands)	
Noncurrent assets	$ 13,908	$ 4,905
Current liabilities	(8,392)	(7,932)
Noncurrent liabilities	(170,743)	(157,429)
Funded status	$ (165,227)	$ (160,456)

The following is a reconciliation of the non-U.S. plans' defined benefit pension obligations:

	2017	2016
	(Amounts in thousands)	
Balance — January 1	$ 383,947	$ 386,175
Service cost	7,247	7,131
Interest cost	9,320	11,623
Employee contributions	228	219
Settlements and other	(9,260)	(10,347)
Actuarial (gain) loss (1)	(1,913)	49,826
Net benefits and expenses paid	(18,701)	(21,735)
Currency translation impact(2)	43,092	(38,945)
Balance — December 31	$ 413,960	$ 383,947
Accumulated benefit obligations at December 31	$ 391,102	$ 362,618

(1) The 2016 actuarial loss primarily reflects the decrease in the discount rates for U.K. and the Euro-zone.

(2) In 2017 the currency translation impact reflects the weakening of the U.S. dollar against our significant currencies, primarily the Euro and British pound, while in 2016 the currency translation impact reflects the strengthening of the U.S. dollar against our significant currencies, primarily the Euro and British pound.

The following table summarizes the expected cash benefit payments for the non-U.S. defined benefit plans in the future (amounts in millions):

2018	$ 17.5
2019	16.9
2020	17.2
2021	17.7
2022	18.5
2023-2027	97.3

The following table shows the change in accumulated other comprehensive loss attributable to the components of the net cost and the change in Benefit Obligations for non-U.S. plans, net of tax:

	2017	2016
	(Amounts in thousands)	
Balance — January 1	$ (68,260)	$ (59,993)
Amortization of net loss	2,756	3,673
Net gain (loss) arising during the year	2,289	(20,071)
Settlement loss	1,668	610
Prior service benefit arising during the year	28	—
Currency translation impact and other	(6,353)	7,521
Balance — December 31	$ (67,872)	$ (68,260)

Amounts recorded in accumulated other comprehensive loss consist of:

	December 31,	
	2017	2016
	(Amounts in thousands)	
Unrecognized net loss	$ (67,886)	$ (68,194)
Unrecognized prior service gain (cost)	14	(66)
Accumulated other comprehensive loss, net of tax	$ (67,872)	$ (68,260)

The following is a reconciliation of the non-U.S. plans' defined benefit pension assets:

	2017	2016
	(Amounts in thousands)	
Balance — January 1	$ 223,491	$ 230,827
Return on plan assets	10,871	33,073
Employee contributions	228	219
Company contributions	18,494	20,004
Settlements	(7,383)	(4,511)
Currency translation impact and other	21,733	(34,386)
Net benefits and expenses paid	(18,701)	(21,735)
Balance — December 31	$ 248,733	$ 223,491

Our contributions to non-U.S. defined benefit pension plans in 2018 are expected to be approximately $10 million, excluding direct benefits paid.

The asset allocations for the non-U.S. defined benefit pension plans at the end of 2017 and 2016 are as follows:

	Target Allocation at December 31,		Percentage of Actual Plan Assets at December 31,	
Asset category	**2017**	**2016**	**2017**	**2016**
Cash and cash equivalents	3%	4%	3%	4%
North American Companies	3%	3%	3%	3%
Global Equity	3%	8%	3%	8%
Equity securities	6%	11%	6%	11%
U.K. Government Gilt Index	41%	31%	41%	31%
U.K. Corporate Bond Index	1%	1%	1%	1%
Global Fixed Income Bond	2%	2%	2%	2%
Liability Driven Investment	9%	11%	9%	11%
Fixed income	53%	45%	53%	45%
Multi-asset	22%	25%	22%	25%
Buy-in Contract	10%	9%	10%	9%
Other	6%	6%	6%	6%
Other Types	38%	40%	38%	40%

None of our common stock is held directly by these plans. In all cases, our investment strategy for these plans is to earn a long-term rate of return consistent with an acceptable degree of risk and minimize our cash contributions over the life of the plan, while taking into account the liquidity needs of the plan and the legal requirements of the particular country. We preserve capital through diversified investments in high quality securities.

Asset allocation differs by plan based upon the plan’s benefit obligation to participants, as well as the results of asset and liability studies that are conducted for each plan and in consideration of our future cash flow needs. Professional money management firms manage plan assets and we engage a consultant in the U.K. to assist in evaluation of these activities. The assets of the U.K. plans are overseen by a group of Trustees who review the investment strategy, asset allocation and fund selection. These assets are passively managed as they are invested in index funds that attempt to match the performance of the specified benchmark index.

The fair values of the non-U.S. assets were:

	At December 31, 2017				At December 31, 2016			
		Hierarchical Levels				Hierarchical Levels		
	Total	I	II	III	Total	I	II	III
	(Amounts in thousands)				(Amounts in thousands)			
Cash	$ 6,815	$ 6,815	$ —	$ —	$ 10,396	$ 10,396	$ —	$ —
Commingled Funds:								
Equity securities								
North American Companies(a)	7,119	—	7,119	—	5,945	—	5,945	—
Global Equity(b)	8,951	—	8,951	—	16,774	—	16,774	—
Fixed income securities								
U.K. Government Gilt Index(c)	103,230	—	103,230	—	68,227	—	68,227	—
U.K. Corporate Bond Index(d)	1,316	—	1,316	—	2,785	—	2,785	—
Global Fixed Income Bond(e)	5,350	—	5,350	—	5,259	—	5,259	—
Liability Driven Investment (f)	21,837	—	21,837	—	25,348	—	25,348	—
Other Types of Investments:								
Multi-asset (g)	55,503	—	55,503	—	54,880	—	54,880	—
Buy-in Contract (h)	24,484	—	—	24,484	20,931	—	—	20,931
Other(i)	14,128	—	—	14,128	12,946	—	—	12,946
	$ 248,733	$ 6,815	$ 203,306	$ 38,612	$ 223,491	$ 10,396	$ 179,218	$ 33,877

(a) North American Companies represents U.S. and Canadian large cap equity funds, which are managed and track their respective benchmarks (FTSE All-World USA Index and FTSE All-World Canada Index).

(b) Global Equity represents actively managed, global equity funds taking a top-down strategic view on the different regions by analyzing companies based on fundamentals, market-driven, thematic and quantitative factors to generate alpha.

(c) U.K. Government Gilt Index represents U.K. government issued fixed income investments which are passively managed and track their respective benchmarks.

(d) U.K. Corporate Bond Index represents U.K. corporate bond investments, which are passively managed and track the iBoxx Over 15 years £ Non-Gilt Index.

(e) Global Fixed Income Bond represents investment funds that are actively managed, diversified and invested in traditional government bonds, high-quality corporate bonds, asset backed securities and emerging market debt.

(f) Liability Driven Investment seeks to invest in fixed income securities that closely match those found in discount curves used to value the plan's liabilities.

(g) Multi-asset seeks an attractive risk-adjusted return by investing in a diversified portfolio of strategies, including equities and fixed income.

(h) Buy-in contract represents an asset held by the Netherlands plan, whereby the cost of providing benefits is funded by the contract. The fair value of the asset as January 1, 2017 was $20.9 million with contributions and currency adjustments resulting in a fair value of $24.5 million at December 31, 2017. The fair value of this asset is based on the current present value of accrued benefits and will fluctuate based on changes in the obligations associated with covered plan members as well as the assumptions used in the present value calculation.

(i) Includes assets held by plans outside the United Kingdom and the Netherlands. Details, including Level III rollforward details are not material.

Defined Benefit Pension Plans with Accumulated Benefit Obligations in Excess of Plan Assets

The following summarizes key pension plan information regarding U.S. and non-U.S. plans whose accumulated benefit obligations exceed the fair value of their respective plan assets.

	December 31, 2017	December 31, 2016
	(Amounts in thousands)	
Benefit Obligation	$ 217,510	$ 802,456
Accumulated benefit obligation	197,816	784,337
Fair value of plan assets	32,052	607,705

Postretirement Medical Plans

We sponsor several defined benefit postretirement medical plans covering certain current retirees and a limited number of future retirees in the U.S. These plans provide for medical and dental benefits and are administered through insurance companies and health maintenance organizations. The plans include participant contributions, deductibles, co-insurance provisions and other limitations and are integrated with Medicare and other group plans. We fund the plans as benefits and health maintenance organization premiums are paid, such that the plans hold no assets in any period presented. Accordingly, we have no investment strategy or targeted allocations for plan assets. Benefits under our postretirement medical plans are not available to new employees or most existing employees.

The following are assumptions related to postretirement benefits:

	Year Ended December 31, 2017	2016	2015
Weighted average assumptions used to determine Benefit Obligation:			
Discount rate	3.48%	3.75%	4.25%
Weighted average assumptions used to determine net expense:			
Discount rate	3.75%	4.25%	3.75%

The assumed ranges for the annual rates of increase in medical costs used to determine net expense were 7.0% for 2017 and 7.5% for both 2016 and 2015, with a gradual decrease to 5.0% for 2025 and future years.

Net postretirement benefit cost for postretirement medical plans was:

	Year Ended December 31, 2017	2016	2015
	(Amounts in thousands)		
Service cost	$ —	$ 1	$ 2
Interest cost	919	1,154	1,155
Amortization of unrecognized prior service cost	122	122	122
Amortization of unrecognized net gain	(275)	(355)	(539)
Net postretirement benefit expense	$ 766	$ 922	$ 740

The estimated prior service cost expected to be amortized from accumulated other comprehensive loss into U.S. pension expense in 2018 is $0.1 million. The estimated net gain for postretirement medical plans that will be amortized from accumulated other comprehensive loss into U.S. expense in 2018 is $0.5 million.

The following summarizes the accrued postretirement benefits liability for the postretirement medical plans:

	December 31, 2017	December 31, 2016
	(Amounts in thousands)	
Postretirement Benefit Obligation	$ 23,882	$ 27,317
Funded status	$ (23,882)	$ (27,317)

The following summarizes amounts recognized in the balance sheet for postretirement Benefit Obligation:

	December 31, 2017	December 31, 2016
	(Amounts in thousands)	
Current liabilities	$ (2,952)	$ (3,442)
Noncurrent liabilities	(20,930)	(23,875)
Funded status	$ (23,882)	$ (27,317)

The following is a reconciliation of the postretirement Benefit Obligation:

	2017	2016
	(Amounts in thousands)	
Balance — January 1	$ 27,317	$ 28,614
Service cost	—	1
Interest cost	919	1,154
Employee contributions	939	856
Medicare subsidies receivable	235	117
Actuarial (gain) loss	(1,818)	1,907
Net benefits and expenses paid	(3,710)	(5,332)
Balance — December 31	$ 23,882	$ 27,317

The following presents expected benefit payments for future periods (amounts in millions):

	Expected Payments	Medicare Subsidy
2018	$ 3.0	$ 0.1
2019	2.8	0.1
2020	2.6	0.1
2021	2.3	0.1
2022	2.1	0.1
2023-2027	8.1	0.3

The following table shows the change in accumulated other comprehensive loss attributable to the components of the net cost and the change in Benefit Obligations for postretirement benefits, net of tax:

	2017	2016
	(Amounts in thousands)	
Balance — January 1	$ (163)	$ 1,179
Amortization of net gain	(172)	(223)
Amortization of prior service cost	76	77
Net gain (loss) arising during the year	1,139	(1,196)
Balance — December 31	$ 880	$ (163)

Amounts recorded in accumulated other comprehensive loss consist of:

	December 31,	
	2017	2016
	(Amounts in thousands)	
Unrecognized net gain (loss)	$ 1,921	$ (455)
Unrecognized prior service (cost) gain	(1,041)	292
Accumulated other comprehensive income (loss), net of tax	$ 880	$ (163)

We made contributions to the postretirement medical plans to pay benefits of $2.5 million in 2017, $4.4 million in 2016 and $5.1 million in 2015. Because the postretirement medical plans are unfunded, we make contributions as the covered individuals' claims are approved for payment. Accordingly, contributions during any period are directly correlated to the benefits paid.

Assumed health care cost trend rates have an effect on the amounts reported for the postretirement medical plans. A one-percentage point change in assumed health care cost trend rates would have the following effect on the 2017 reported amounts (in thousands):

	1% Increase	1% Decrease
Effect on postretirement Benefit Obligation	$ 116	$ (111)
Effect on service cost plus interest cost	4	(4)

Defined Contribution Plans

We sponsor several defined contribution plans covering substantially all U.S. and Canadian employees and certain other non-U.S. employees. Employees may contribute to these plans, and these contributions are matched in varying amounts by us, including opportunities for discretionary matching contributions by us. Defined contribution plan expense was $17.7 million in 2017, $17.2 million in 2016 and $19.6 million in 2015.

12. LEGAL MATTERS AND CONTINGENCIES

Asbestos-Related Claims

We are a defendant in a substantial number of lawsuits that seek to recover damages for personal injury allegedly caused by exposure to asbestos-containing products manufactured and/or distributed by our heritage companies in the past. While the overall number of asbestos-related claims has generally declined in recent years, there can be no assurance that this trend will continue, or that the average cost per claim will not further increase. Asbestos-containing materials incorporated into any such products were encapsulated and used as internal components of process equipment, and we do not believe that any significant emission of asbestos fibers occurred during the use of this equipment.

Our practice is to vigorously contest and resolve these claims, and we have been successful in resolving a majority of claims with little or no payment. Historically, a high percentage of resolved claims have been covered by applicable insurance or indemnities from other companies, and we believe that a substantial majority of existing claims should continue to be covered by insurance or indemnities. Accordingly, we have recorded a liability for our estimate of the most likely settlement of asserted claims and a related receivable from insurers or other companies for our estimated recovery, to the extent we believe that the amounts of recovery are probable and not otherwise in dispute. While unfavorable rulings, judgments or settlement terms regarding these claims could have a material adverse impact on our business, financial condition, results of operations and cash flows, we currently believe the likelihood is remote.

Additionally, we have claims pending against certain insurers that, if resolved more favorably than reflected in the recorded receivables, would result in discrete gains in the applicable quarter. We are currently unable to estimate the impact, if any, of unasserted asbestos-related claims, although future claims would also be subject to then existing indemnities and insurance coverage.

United Nations Oil-for-Food Program

In mid-2006, the French authorities began an investigation of over 170 French companies, of which one of our French subsidiaries was included, concerning suspected inappropriate activities conducted in connection with the United Nations Oil for Food Program. As previously disclosed, the French investigation of our French subsidiary was formally opened in the first quarter of 2010, and our French subsidiary filed a formal response with the French court. In July 2012, the French court ruled against our procedural motions to challenge the constitutionality of the charges and quash the indictment. Hearings occurred on April 1-2, 2015, and the Company presented its defense and closing arguments. On June 18, 2015, the French court issued its ruling dismissing the case against the Company and the other defendants. However, on July 1, 2015, the French prosecutor lodged an appeal and we anticipate that the hearing for the appeal will be held in 2018. We currently do not expect to incur additional case resolution costs of a material amount in this matter. However, if the French authorities ultimately take enforcement action against our French subsidiary regarding its investigation, we may be subject to monetary and non-monetary penalties, which we currently do not believe will have a material adverse financial impact on our company.

Other

We are currently involved as a potentially responsible party at five former public waste disposal sites in various stages of evaluation or remediation. The projected cost of remediation at these sites, as well as our alleged "fair share" allocation, will remain uncertain until all studies have been completed and the parties have either negotiated an amicable resolution or the matter has been judicially resolved. At each site, there are many other parties who have similarly been identified. Many of the other parties identified are financially strong and solvent companies that appear able to pay their share of the remediation costs. Based on our information about the waste disposal practices at these sites and the environmental regulatory process in general, we believe that it is likely that ultimate remediation liability costs for each site will be apportioned among all liable parties, including site owners and waste transporters, according to the volumes and/or toxicity of the wastes shown to have been disposed of at the sites. We believe that our financial exposure for existing disposal sites will not be materially in excess of accrued reserves.

As previously disclosed, we terminated an employee of an overseas subsidiary after uncovering actions that violated our Code of Business Conduct and may have violated the Foreign Corrupt Practices Act. We completed our internal investigation into the matter, self-reported the potential violation to the United States Department of Justice (the “DOJ”) and the SEC, and continue to cooperate with the DOJ and SEC. We previously received a subpoena from the SEC requesting additional information and documentation related to the matter and have completed our response to the subpoena. We currently believe that this matter will not have a material adverse financial impact on the Company, but there can be no assurance that the Company will not be subjected to monetary penalties and additional costs.

We are also a defendant in a number of other lawsuits, including product liability claims, that are insured, subject to the applicable deductibles, arising in the ordinary course of business, and we are also involved in other uninsured routine litigation incidental to our business. We currently believe none of such litigation, either individually or in the aggregate, is material to our business, operations or overall financial condition. However, litigation is inherently unpredictable, and resolutions or dispositions of claims or lawsuits by settlement or otherwise could have an adverse impact on our financial position, results of operations or cash flows for the reporting period in which any such resolution or disposition occurs.

Although none of the aforementioned potential liabilities can be quantified with absolute certainty except as otherwise indicated above, we have established reserves covering exposures relating to contingencies, to the extent believed to be reasonably estimable and probable based on past experience and available facts. While additional exposures beyond these reserves could exist, they currently cannot be estimated. We will continue to evaluate and update the reserves as necessary and appropriate.

13. WARRANTY RESERVE

We have recorded reserves for product warranty claims that are included in current liabilities. The following is a summary of the activity in the warranty reserve:

	2017	2016	2015
		(Amounts in thousands)	
Balance — January 1	$ 30,459	$ 34,574	$ 31,095
Accruals for warranty expense, net of adjustments	35,001	28,364	33,113
Settlements made	(31,859)	(32,479)	(29,634)
Balance — December 31	$ 33,601	$ 30,459	$ 34,574

14. SHAREHOLDERS’ EQUITY

Dividends - On February 15, 2016, our Board of Directors authorized an increase in the payment of quarterly dividends on our common stock from $0.18 per share to $0.19 per share payable beginning on April 8, 2016. On February 16, 2015, our Board of Directors authorized an increase in the payment of quarterly dividends on our common stock from $0.16 per share to $0.18 per share payable beginning on April 10, 2015. Generally, our dividend date-of-record is in the last month of the quarter, and the dividend is paid the following month. Any subsequent dividends will be reviewed by our Board of Directors and declared at its discretion dependent on its assessment of our financial situation and business outlook at the applicable time.

Share Repurchase Program – On November 13, 2014, our Board of Directors approved a $500.0 million share repurchase authorization. Our share repurchase program does not have an expiration date, and we reserve the right to limit or terminate the repurchase program at any time without notice.

We had no repurchases of shares of our outstanding common stock for the year ended December 31, 2017 and 2016 compared to share repurchases of 6,047,839 for $303.7 million during 2015. As of December 31, 2017, we have $160.7 million of remaining capacity under our current share repurchase program.

15. INCOME TAXES

On December 22, 2017, the U.S. enacted the Tax Cuts and Jobs Act of 2017 (the “Act”), which significantly changed U.S. tax law. The Act, among other things, lowered the Company’s U.S. statutory federal income tax rate from 35% to 21% effective January 1, 2018, while imposing a deemed repatriation tax on deferred foreign income and implementing a modified territorial tax system. While the Act provides for a territorial tax system, beginning in 2018, it provides for two new anti-base erosion provisions, the global intangible low-taxed income (“GILTI”) provision and the base-erosion and anti-abuse tax (“BEAT”) provision which effectively creates a new minimum tax on certain future foreign earnings.

The Company included reasonable estimates of the income tax effects in applying the provisions of the Act in accordance with Accounting Standards Codification Topic 740, Income Taxes (ASC Topic 740) and following the guidance in SEC Staff Accounting Bulletin No. 118 (“SAB 118”). As a result, the impacts from the Act may differ, primarily related to deemed repatriated earnings and associated withholding taxes, from these provisional amounts, possibly materially, due to, among other things, additional analysis, changes from interpretations enacted and assumptions the Company has made, additional regulatory guidance that may be issued, and actions the Company may take as a result of the Act. Due to the timing of the Act and the substantial changes it brings, SAB 118 provides registrants a measurement period to report the impact of the new US tax law. The financial reporting impact of the Act is expected to be completed no later than the fourth quarter of 2018. The Company has elected to account for the GILTI provision in the period in which it is incurred.

The impacts of these changes are reflected in the 2017 provisional tax expense which resulted in a net provisional charge of $115.3 million. The charge is comprised of $120.5 million of tax expense related to the deemed repatriation of unremitted earnings of foreign subsidiaries as well as associated local withholding taxes, partially offset by $5.2 million of tax benefit relating to other changes pursuant to the Act.

The provision for income taxes consists of the following:

	Year Ended December 31,		
	2017	2016	2015
	(Amounts in thousands)		
Current:			
U.S. federal	$ 59,292	$ 20,569	$ 62,032
Non-U.S.	22,442	75,227	78,489
State and local	5,537	2,612	4,947
Total current	87,271	98,408	145,468
Deferred:			
U.S. federal	135,294	22,249	(3,509)
Non-U.S.	34,626	(45,577)	4,972
State and local	1,488	2,300	1,420
Total deferred	171,408	(21,028)	2,883
Total provision	$ 258,679	$ 77,380	$ 148,351

The provision for income taxes differs from the statutory corporate rate due to the following:

	Year Ended December 31,		
	2017	2016	2015
	(Amounts in millions)		
Statutory federal income tax at 35%	$ 92.1	$ 74.5	$ 144.3
Foreign impact, net	(36.4)	(13.9)	(22.1)
Impact of U.S. Tax Cuts and Jobs Act of 2017	115.3	—	—
Change in valuation allowances	73.6	14.2	11.6
State and local income taxes, net	4.9	4.9	6.4
Other, net	9.2	(2.3)	8.2
Total	$ 258.7	$ 77.4	$ 148.4
Effective tax rate	98.4%	36.3%	36.0%

The 2017 tax rate differed from the federal statutory rate of 35% primarily due to the impacts pursuant to enactment of the Act, the net impact of foreign operations, the establishment of valuation allowances against our deferred tax assets in various foreign jurisdictions, primarily Mexico, and taxes related to the sales of the Gestra and Vogt businesses. Our effective tax rate of 98.4% for the year ended December 31, 2017 increased from 36.3% in 2016 due to the tax impacts described above. The 2016 tax rate differed from the federal statutory rate of 35% primarily due to the net impact of foreign operations, tax impacts from our Realignment Programs and losses in certain foreign jurisdictions for which no tax benefit was provided. The 2015 tax rate differed from the federal statutory rate of 35% primarily due to tax impacts of the realignment programs, the non-deductible Venezuelan exchange rate remeasurement loss, and the establishment of a valuation allowance against our deferred tax assets in Brazil in the amount of $12.6 million, partially offset by the net impact of foreign operations, which included the impacts of lower foreign tax rates and changes in our reserves established for uncertain tax positions.

In connection with the Act and as of December 31, 2017, we do not assert permanent reinvestment on any of our foreign subsidiaries. Prior to this time, we asserted permanent reinvestment on the majority of invested capital and unremitted foreign earnings in our foreign subsidiaries. However, we did not assert permanent reinvestment on a limited number of foreign subsidiaries where future distributions may occur. During each of the two years reported in the period ended December 31, 2016, we did not recognize any net deferred tax assets attributable to excess foreign tax credits on unremitted earnings or foreign currency translation adjustments in our foreign subsidiaries with excess financial reporting basis.

Deferred income taxes reflect the net tax effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes. Significant components of the consolidated deferred tax assets and liabilities were:

	December 31,	
	2017	2016
	(Amounts in thousands)	
Deferred tax assets related to:		
Retirement benefits	$ 28,519	$ 39,644
Net operating loss carryforwards	73,465	48,180
Compensation accruals	24,030	30,299
Inventories	30,870	43,445
Credit carryforwards	8,910	64,251
Warranty and accrued liabilities	16,005	30,612
Bad debt reserve	30,698	27,857
Other	40,859	40,806
Total deferred tax assets	253,356	325,094
Valuation allowances	(119,309)	(36,191)
Net deferred tax assets	134,047	288,903
Deferred tax liabilities related to:		
Property, plant and equipment	(24,204)	(47,616)
Goodwill and intangibles	(123,036)	(176,935)
Non-U.S. undistributed earnings taxes	(75,442)	—
Other	(15,667)	(716)
Total deferred tax liabilities	(238,349)	(225,267)
Deferred tax (liabilities) assets, net	$ (104,302)	$ 63,636

We have $323.9 million of U.S. and foreign net operating loss carryforwards at December 31, 2017. Of this total, $32.4 million are state net operating losses. Net operating losses generated in the U.S., if unused, will expire in 2017 through 2027. The majority of our non-U.S. net operating losses carry forward without expiration. Additionally, we have $7.5 million of foreign tax credit carryforwards at December 31, 2017, expiring in 2026 and 2027, for which a valuation allowance of $7.5 million has been recorded.

Earnings before income taxes comprised:

	Year Ended December 31,		
	2017	2016	2015
	(Amounts in thousands)		
U.S.	$ 102,372	$ 170,681	$ 215,719
Non-U.S.	160,635	42,231	196,647
Total	$ 263,007	$ 212,912	$ 412,366

A tabular reconciliation of the total gross amount of unrecognized tax benefits, excluding interest and penalties, is as follows (in millions):

	2017	2016	2015
Balance — January 1	$ 59.3	$ 56.1	$ 51.5
Gross amount of (decrease) increase in unrecognized tax benefits resulting from tax positions taken:			
During a prior year	(3.5)	1.9	9.8
During the current period	5.5	14.3	8.6
Decreases in unrecognized tax benefits relating to:			
Settlements with taxing authorities	(10.8)	(4.0)	(1.1)
Lapse of the applicable statute of limitations	(3.1)	(7.3)	(7.4)
Increase (decrease) in unrecognized tax benefits relating to foreign currency translation adjustments	4.1	(1.7)	(5.3)
Balance — December 31	$ 51.5	$ 59.3	$ 56.1

The amount of gross unrecognized tax benefits at December 31, 2017 was $66.1 million, which includes $14.6 million of accrued interest and penalties. Of this amount $65.5 million, if recognized, would favorably impact our effective tax rate.

With limited exception, we are no longer subject to U.S. federal income tax audits for years through 2015, state and local income tax audits for years through 2011 or non-U.S. income tax audits for years through 2010. We are currently under examination for various years in Austria, Canada, France, Germany, India, Indonesia, Italy, Mexico, Saudi Arabia, Singapore, the U.S. and Venezuela.

It is reasonably possible that within the next 12 months the effective tax rate will be impacted by the resolution of some or all of the matters audited by various taxing authorities. It is also reasonably possible that we will have the statute of limitations close in various taxing jurisdictions within the next 12 months. As such, we estimate we could record a reduction in our tax expense up to approximately $8 million within the next 12 months.

16. BUSINESS SEGMENT INFORMATION

Our business segments share a focus on industrial flow control technology and have a high number of common customers. These segments also have complementary product offerings and technologies that are often combined in applications that provide us a net competitive advantage. Our segments also benefit from our global footprint and our economies of scale in reducing administrative and overhead costs to serve customers more cost effectively.

We conduct our operations through these three business segments based on type of product and how we manage the business:

- EPD for long lead time, custom and other highly-engineered pumps and pump systems, mechanical seals, auxiliary systems and replacement parts and related services;
- IPD for engineered and pre-configured industrial pumps and pump systems and related products and services; and
- FCD for engineered and industrial valves, control valves, actuators and controls and related services.

For decision-making purposes, our Chief Executive Officer ("CEO") and other members of senior executive management use financial information generated and reported at the reportable segment level. Our corporate headquarters does not constitute a separate division or business segment. We evaluate segment performance and allocate resources based on each reportable segment’s operating income. Amounts classified as "Eliminations and All Other" include corporate headquarters costs and other minor entities that do not constitute separate segments. Intersegment sales and transfers are recorded at cost plus a profit margin, with the sales and related margin on such sales eliminated in consolidation.

The following is a summary of the financial information of our reportable segments as of and for the years ended December 31, 2017, 2016 and 2015 reconciled to the amounts reported in the consolidated financial statements.

	EPD	IPD	FCD	Subtotal—Reportable Segments	Eliminations and All Other	Consolidated Total
			(Amounts in thousands)			
Year Ended December 31, 2017:						
Sales to external customers	$1,738,082	$ 739,656	$ 1,183,093	$ 3,660,831	$ —	$ 3,660,831
Intersegment sales	37,347	35,552	5,018	77,917	(77,917)	—
Segment operating income (loss)	156,830	(49,475)	321,230	428,585	(93,163)	335,422
Depreciation and amortization	48,659	28,864	27,278	104,801	13,653	118,454
Identifiable assets	1,956,638	1,028,255	1,317,944	4,302,837	607,637	4,910,474
Capital expenditures	19,790	8,368	16,626	44,784	16,818	61,602

	EPD	IPD	FCD	Subtotal—Reportable Segments	Eliminations and All Other	Consolidated Total
			(Amounts in thousands)			
Year Ended December 31, 2016:						
Sales to external customers	$1,963,086	$ 799,923	$ 1,227,478	$ 3,990,487	$ —	$ 3,990,487
Intersegment sales	32,873	35,156	6,234	74,263	(74,263)	—
Segment operating income (loss)	167,420	(6,370)	198,620	359,670	(91,705)	267,965
Depreciation and amortization	48,957	28,824	28,189	105,970	10,782	116,752
Identifiable assets	2,082,729	1,010,107	1,310,273	4,403,109	305,814	4,708,923
Capital expenditures	29,426	17,336	26,467	73,229	16,470	89,699

	EPD	IPD	FCD	Subtotal—Reportable Segments	Eliminations and All Other	Consolidated Total
			(Amounts in thousands)			
Year Ended December 31, 2015:						
Sales to external customers	$ 2,209,809	$ 937,756	$ 1,410,226	$ 4,557,791	$ —	$ 4,557,791
Intersegment sales	46,821	44,137	5,276	96,234	(96,234)	—
Segment operating income	319,980	29,128	233,616	582,724	(68,059)	514,665
Depreciation and amortization	50,289	36,826	30,404	117,519	9,568	127,087
Identifiable assets	2,230,134	1,056,400	1,323,758	4,610,292	352,814	4,963,106
Capital expenditures	88,496	19,446	63,569	171,511	10,350	181,861

Geographic Information — We attribute sales to different geographic areas based on the facilities' locations. Long-lived assets are classified based on the geographic area in which the assets are located and exclude deferred taxes, goodwill and intangible assets. Prior period information has been updated to conform to current year presentation. Sales and long-lived assets by geographic area are as follows:

	Year Ended December 31, 2017			
	Sales	Percentage	Long-Lived Assets	Percentage
	(Amounts in thousands, except percentages)			
United States	$ 1,460,899	40.0%	$ 333,126	38.2%
EMA(1)	1,434,506	39.2%	321,256	36.9%
Asia(2)	471,054	12.9%	148,757	17.1%
Other(3)	294,372	7.9%	68,379	7.8%
Consolidated total	$ 3,660,831	100.0%	$ 871,518	100.0%

	Year Ended December 31, 2016			
	Sales	Percentage	Long-Lived Assets	Percentage
	(Amounts in thousands, except percentages)			
United States	$ 1,537,779	38.5%	$ 338,038	37.2%
EMA(1)	1,541,984	38.6%	288,903	31.8%
Asia(2)	500,424	12.5%	144,599	15.9%
Other(3)	410,300	10.4%	136,391	15.1%
Consolidated total	$ 3,990,487	100.0%	$ 907,931	100.0%

	Year Ended December 31, 2015			
	Sales	Percentage	Long-Lived Assets	Percentage
	(Amounts in thousands, except percentages)			
United States	$ 1,679,075	36.9%	$ 338,556	34.4%
EMA(1)	1,773,281	38.9%	326,728	33.2%
Asia(2)	562,792	12.3%	143,767	14.6%
Other(3)	542,643	11.9%	173,706	17.8%
Consolidated total	$ 4,557,791	100.0%	$ 982,757	100.0%

---

(1) "EMA" includes Europe, the Middle East and Africa. In 2017, 2016 and 2015, Germany accounted for approximately 10%, 10% and 11%, respectively, of consolidated long-lived assets. No other individual country within this group represents 10% or more of consolidated totals for any period presented.

(2) "Asia" includes Asia and Australia. No individual country within this group represents 10% or more of consolidated totals for any period presented.

(3) "Other" includes Canada and Latin America. No individual country within this group represents 10% or more of consolidated totals for any period presented.

Net sales to international customers, including export sales from the U.S., represented approximately 64% of total sales in 2017 and 2016 and 66% in 2015.

Major Customer Information — We have a large number of customers across a large number of manufacturing and service facilities and do not believe that we have sales to any individual customer that represent 10% or more of consolidated sales for any of the years presented.

17. ACCUMULATED OTHER COMPREHENSIVE LOSS

The following presents the components of accumulated other comprehensive loss (AOCL), net of related tax effects:

	2017				2016			
(Amounts in thousands)	Foreign currency translation items(1)	Pension and other post-retirement effects	Cash flow hedging activity	Total(1)	Foreign currency translation items(1)	Pension and other post-retirement effects	Cash flow hedging activity	Total(1)
Balance - January 1	$ (483,609)	$ (136,530)	$ (1,238)	$ (621,377)	$ (411,615)	$ (120,461)	$ (3,458)	$ (535,534)
Other comprehensive income (loss) before reclassifications	98,308	12,557	125	110,990	(71,994)	(23,939)	1,064	(94,869)
Amounts reclassified from AOCL	522	8,218	23	8,763	—	7,870	1,156	9,026
Net current-period other comprehensive income (loss)	98,830	20,775	148	119,753	(71,994)	(16,069)	2,220	(85,843)
Balance - December 31	$ (384,779)	$ (115,755)	$ (1,090)	$ (501,624)	$ (483,609)	$ (136,530)	$ (1,238)	$ (621,377)

(1) Includes foreign currency translation adjustments attributable to noncontrolling interests of $3.8 million, $3.4 million and $2.7 million for December 31, 2017, 2016 and 2015, respectively. For the year ended December 31, 2017, foreign currency translation impacts primarily represented the strengthening of the Euro, British pound and Indian rupee exchange rates versus the U.S. dollar for the period. For the year ended December 31, 2016, foreign currency translation impacts primarily represented the weakening of the British pound, Euro and Mexican peso exchange rates versus the U.S. dollar for the period. Includes net investment hedge loss of $22.5 million and a gain of $1.4 million, net of deferred taxes, for the year ended December 31, 2017 and 2016, respectively. Amounts in parentheses indicate debits.

The following table presents the reclassifications out of AOCL:

(Amounts in thousands)	Affected line item in the statement of income	2017(1)	2016(1)
Foreign currency translation items			
Release of cumulative translation adjustments due to sale of business	Gain on sale of businesses	$ (522)	$ —
	Tax benefit	—	—
	Net of tax	$ (522)	$ —
Cash flow hedging activity			
Foreign exchange contracts			
	Sales	(30)	(1,531)
	Tax benefit	7	375
	Net of tax	$ (23)	$ (1,156)
Pension and other postretirement effects			
Amortization of actuarial losses(2)		$ (9,761)	$ (9,750)
Prior service costs(2)		(108)	(492)
Settlements and other(2)		(2,113)	(871)
	Tax benefit	3,764	3,243
	Net of tax	$ (8,218)	$ (7,870)

(1) Amounts in parentheses indicate decreases to income. None of the reclassification amounts have a noncontrolling interest component.
(2) These accumulated other comprehensive loss components are included in the computation of net periodic pension cost. See Note 11 for additional details.

18. REALIGNMENT PROGRAMS

In the first quarter of 2015, we initiated a realignment program ("R1 Realignment Program") to reduce and optimize certain non-strategic QRCs and manufacturing facilities from the SIHI acquisition. In the second quarter of 2015, we initiated a second realignment program ("R2 Realignment Program") to better align costs and improve long-term efficiency, including further manufacturing optimization through the consolidation of facilities, a reduction in our workforce, the transfer of activities from high-cost regions to lower-cost facilities and the divestiture of certain non-strategic assets.

The R1 Realignment Program and the R2 Realignment Program (collectively the "Realignment Programs") consist of both restructuring and non-restructuring charges. Restructuring charges represent costs associated with the relocation or reorganization of certain business activities and facility closures and include related severance costs. Non-restructuring charges are primarily employee severance associated with workforce reductions to reduce redundancies. Expenses are primarily reported in COS or SG&A, as applicable, in our condensed consolidated statements of income. We anticipate a total investment in these programs of approximately $360 million, including projects still under final evaluation. We anticipate that the majority of any remaining charges will be incurred throughout 2018.

Generally, the aforementioned charges will be paid in cash, except for asset write-downs, which are non-cash charges. The following is a summary of total charges, net of adjustments, related to the Realignment Programs:

	December 31, 2017					
(Amounts in thousands)	Engineered Product Division	Industrial Product Division	Flow Control Division	Subtotal–Reportable Segments	Eliminations and All Other	Consolidated Total
Restructuring Charges						
COS	$ 8,101	$ 7,177	$ 8,666	$ 23,944	$ —	$ 23,944
SG&A	523	1,120	(455)	1,188	261	1,449
Income tax expense(1)	1,000	—	—	1,000	—	1,000
	$ 9,624	$ 8,297	$ 8,211	$ 26,132	$ 261	$ 26,393
Non-Restructuring Charges						
COS	$ 10,263	$ 6,806	$ 2,934	$ 20,003	$ —	$ 20,003
SG&A	6,853	10,191	3,325	20,369	5,490	25,859
	$ 17,116	$ 16,997	$ 6,259	$ 40,372	$ 5,490	$ 45,862
Total Realignment Charges						
COS	$ 18,364	$ 13,983	$ 11,600	$ 43,947	$ —	$ 43,947
SG&A	7,376	11,311	2,870	21,557	5,751	27,308
Income tax expense(1)	1,000	—	—	1,000	—	1,000
Total	$ 26,740	$ 25,294	$ 14,470	$ 66,504	$ 5,751	$ 72,255

(Amounts in thousands)	December 31, 2016 Engineered Product Division	Industrial Product Division	Flow Control Division	Subtotal–Reportable Segments	Eliminations and All Other	Consolidated Total
Restructuring Charges						
COS	$ 24,748	$ 20,202	$ 4,688	$ 49,638	$ —	$ 49,638
SG&A	10,342	6,338	1,941	18,621	18	18,639
Income tax expense(1)	6,000	2,800	600	9,400	—	9,400
	$ 41,090	$ 29,340	$ 7,229	$ 77,659	$ 18	$ 77,677
Non-Restructuring Charges						
COS	5,894	6,022	$ 3,350	$ 15,266	$ 8	$ 15,274
SG&A	3,462	2,062	1,426	6,950	4,432	11,382
	$ 9,356	$ 8,084	$ 4,776	$ 22,216	$ 4,440	$ 26,656
Total Realignment Charges						
COS	$ 30,642	$ 26,224	$ 8,038	$ 64,904	$ 8	$ 64,912
SG&A	13,804	8,400	3,367	25,571	4,450	30,021
Income tax expense(1)	6,000	2,800	600	9,400	—	9,400
Total	$ 50,446	$ 37,424	$ 12,005	$ 99,875	$ 4,458	$ 104,333

(1) Income tax expense includes exit taxes as well as non-deductible costs.

The following is a summary of total inception to date charges, net of adjustments, related to the Realignment Programs:

(Amounts in thousands)	Inception to Date Engineered Product Division	Industrial Product Division (1)	Flow Control Division	Subtotal–Reportable Segments	Eliminations and All Other	Consolidated Total
Restructuring Charges						
COS	$ 42,812	$ 47,825	$ 22,655	$ 113,292	$ —	$ 113,292
SG&A	18,340	16,717	9,097	44,154	279	44,433
Income tax expense(2)	10,400	9,300	1,800	21,500	—	21,500
	$ 71,552	$ 73,842	$ 33,552	$ 178,946	$ 279	$ 179,225
Non-Restructuring Charges						
COS	$ 26,423	$ 20,989	$ 14,867	$ 62,279	$ 8	$ 62,287
SG&A	16,846	18,401	8,164	43,411	9,922	53,333
	$ 43,269	$ 39,390	$ 23,031	$ 105,690	$ 9,930	$ 115,620
Total Realignment Charges						
COS	$ 69,235	$ 68,814	$ 37,522	$ 175,571	$ 8	$ 175,579
SG&A	35,186	35,118	17,261	87,565	10,201	97,766
Income tax expense(2)	10,400	9,300	1,800	21,500	—	21,500
Total	$ 114,821	$ 113,232	$ 56,583	$ 284,636	$ 10,209	$ 294,845

(1) Includes $49.5 million of restructuring charges, primarily COS, related to the R1 Realignment Program.
(2) Income tax expense includes exit taxes as well as non-deductible costs.

Restructuring charges represent costs associated with the relocation or reorganization of certain business activities and facility closures and include costs related to employee severance at closed facilities, contract termination costs, asset write-downs and other costs. Severance costs primarily include costs associated with involuntary termination benefits. Contract termination costs include costs related to termination of operating leases or other contract termination costs. Asset write-downs include accelerated depreciation of fixed assets, accelerated amortization of intangible assets, divestiture of certain non-strategic assets and inventory write-downs. Other costs generally include costs related to employee relocation, asset relocation, vacant facility costs (i.e., taxes and insurance) and other charges.

The following is a summary of restructuring charges, net of adjustments, for the Realignment Programs:

	December 31, 2017				
(Amounts in thousands)	Severance	Contract Termination	Asset Write-Downs	Other	Total
COS	$ 10,241	$ 293	$ 6,400	$ 7,010	$ 23,944
SG&A	(897)	—	249	2,097	1,449
Income tax expense(1)	—	—	—	1,000	1,000
Total	$ 9,344	$ 293	$ 6,649	$ 10,107	$ 26,393

(1) Income tax expense includes exit taxes as well as non-deductible costs.

	December 31, 2016				
(Amounts in thousands)	Severance	Contract Termination	Asset Write-Downs	Other	Total
COS	$ 37,972	$ —	$ 5,429	$ 6,237	$ 49,638
SG&A	7,247	—	1,384	10,008	18,639
Income tax expense(1)	—	—	—	9,400	9,400
Total	$ 45,219	$ —	$ 6,813	$ 25,645	$ 77,677

(1) Income tax expense includes exit taxes as well as non-deductible costs.

The following is a summary of total inception to date restructuring charges, net of adjustments, related to the Realignment Programs:

	Inception to Date				
(Amounts in thousands)	Severance	Contract Termination	Asset Write-Downs	Other	Total (1)
COS(1)	$ 82,185	$ 902	$ 15,317	$ 14,888	$ 113,292
SG&A	29,870	43	1,677	12,843	44,433
Income tax expense(2)	—	—	—	21,500	21,500
Total	$ 112,055	$ 945	$ 16,994	$ 49,231	$ 179,225

(1) Includes $49.5 million of restructuring charges, primarily COS, related to the R1 Realignment Program.
(2) Income tax expense includes exit taxes as well as non-deductible costs.

The following represents the activity, primarily severance, related to the restructuring reserve for the Realignment Programs:

(Amounts in thousands)	R1 Realignment Program	R2 Realignment Program	Total
Balance at December 31, 2015	$ 25,156	$ 33,148	$ 58,304
Charges	11,066	46,805	57,871
Cash expenditures	(24,087)	(38,869)	(62,956)
Other non-cash adjustments, including currency	459	6,649	7,108
Balance at December 31,2016	$ 12,594	$ 47,733	$ 60,327
Charges	(3,425)	22,168	18,743
Cash expenditures	(10,542)	(27,849)	(38,391)
Other non-cash adjustments, including currency	3,378	(4,827)	(1,449)
Balance at December 31, 2017	$ 2,005	$ 37,225	$ 39,230

19. QUARTERLY FINANCIAL DATA (UNAUDITED)

The following presents a summary of the unaudited quarterly data for 2017 and 2016 (amounts in millions, except per share data):

	2017			
Quarter	4th	3rd	2nd	1st
Sales	$ 1,034.1	$ 883.4	$ 877.1	$ 866.3
Gross profit	304.4	267.5	245.0	268.4
Earnings before income taxes	67.0	68.4	103.0	24.6
Net (loss) earnings attributable to Flowserve Corporation	(105.9)	47.6	41.9	19.1
(Loss) earnings per share(1):				
Basic	$ (0.81)	$ 0.36	$ 0.32	$ 0.15
Diluted	(0.81)	0.36	0.32	0.15

	2016			
Quarter	4th	3rd	2nd	1st
Sales	$ 1,071.0	$ 945.9	$ 1,027.4	$ 946.2
Gross profit	327.3	278.0	320.7	305.2
Earnings (loss) before income taxes	89.7	(12.2)	83.9	51.5
Net earnings (loss) attributable to Flowserve Corporation	60.0	(15.8)	54.4	33.9
Earnings (loss) per share(1):				
Basic	$ 0.46	$ (0.12)	$ 0.42	$ 0.26
Diluted	0.46	(0.12)	0.42	0.26

(1) Earnings per share is computed independently for each of the quarters presented. The sum of the quarters may not equal the total year amount due to the impact of changes in weighted average quarterly shares outstanding.

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

None.

ITEM 9A. *CONTROLS AND PROCEDURES*

Disclosure Controls and Procedures

Our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended (the "Exchange Act")) are designed to provide reasonable assurance that the information, which we are required to disclose in the reports that we file or submit under the Exchange Act, is recorded, processed, summarized and reported within the time periods specified in the United States ("U.S.") Securities and Exchange Commission's ("SEC") rules and forms, and that such information is accumulated and communicated to our management, including our Principal Executive Officer and Principal Financial Officer, as appropriate to allow timely decisions regarding required disclosure.

In connection with the preparation of this Annual Report on Form 10-K ("Annual Report") for the year ended December 31, 2017, our management, under the supervision and with the participation of our Principal Executive Officer and our Principal Financial Officer, carried out an evaluation of the effectiveness of the design and operation of our disclosure controls and procedures as of December 31, 2017. Based on this evaluation, our Principal Executive Officer and Principal Financial Officer concluded that our disclosure controls and procedures were effective at the reasonable assurance level as of December 31, 2017.

Management's Report on Internal Control Over Financial Reporting

Our management, under the supervision and with the participation of our Principal Executive Officer and Principal Financial Officer, is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act. 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 in the United States ("U.S. GAAP"). Internal control over financial reporting includes policies and procedures that: (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of our assets; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with U.S. GAAP, and that our receipts and expenditures are being made only in accordance with authorizations of our management and directors; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of our assets that could have a material effect on the financial statements.

Under the supervision and with the participation of our Principal Executive Officer and Principal Financial Officer, our management conducted an assessment of our internal control over financial reporting as of December 31, 2017, based on the criteria established in Internal Control - Integrated Framework (2013), issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). Based on this evaluation, our management concluded our internal control over financial reporting was effective as of December 31, 2017 based on criteria in *Internal Control - Integrated Framework* (2013) issued by the COSO.

The effectiveness of our internal control over financial reporting as of December 31, 2017, has been audited by PricewaterhouseCoopers LLP, our independent registered public accounting firm, as stated in their report, which is included herein.

Remediation of Prior Material Weakness in Internal Control Over Financial Reporting

Since the second quarter of 2017, management actively engaged in the planning and implementation of remediation efforts to address the material weaknesses in our internal control over financial reporting previously disclosed in Item 9A in our Form 10-K/A for the fiscal year ended December 31, 2016. At the direction of management, the following actions were taken:

- we enhanced the current business process of reviewing control procedures, to include additional prior period comparisons and additional key ratios, metrics and risk based criteria as determined by management;
- we enhanced detailed site and/or process balance sheet reviews based on criteria determined by management's risk assessment, including manual journal entries;
- members of senior management, with the participation and input of the Audit Committee, conducted companywide enhanced ethics training of employees and increased communications, controls and accounting policy training for employees at the one non-U.S. site where certain employees had engaged in conduct that circumvented controls;

- employees at the one non-U.S. site engaged in conduct that circumvented controls were separated from the Company and we transferred finance personnel and enhanced corporate involvement in review and approval of controls especially in inventory and manual journal entries; and
- members of senior management, increased communications on requirements for compliance with applicable laws, our Code of Ethics and Business Conduct and the availability of and processes for reporting suspected violations of such laws and/or codes.

The Company is committed to maintaining a strong internal control environment and management believes that the implemented measures described above effectively remediated the material weaknesses.

Changes in Internal Control Over Financial Reporting

There were no changes in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) of the Exchange Act) during the quarter ended December 31, 2017 that have materially affected, or are reasonably likely to materially affect our internal control over financial reporting.

Other

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 existing policies or procedures may deteriorate.

ITEM 9B. ***OTHER INFORMATION***

None.

PART III

ITEM 10. ***DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE***

The information required in this Item 10 is incorporated by reference to all information under the captions “Security Ownership of Directors and Certain Executive Officers,” “Security Ownership of Certain Beneficial Owners,” “Proposal One: Election of Directors,” “Executive Officers,” “Shareholder Proposals and Nominations,” “Section 16(a) Beneficial Ownership Reporting Compliance” and “Certain Relationships and Related Transactions”in our definitive Proxy Statement relating to our 2018 annual meeting of shareholders to be held on May 24, 2018. The Proxy Statement will be filed with the SEC no later than April 30, 2018.

ITEM 11. ***EXECUTIVE COMPENSATION***

The information required in this Item 11 is incorporated by reference to all information under the captions “Executive Compensation,” “Proposal Two: Advisory Vote on Executive Compensation,” “Section 16(a) Beneficial Ownership Reporting Compliance,” “Security Ownership of Directors and Certain Executive Officers,” “Compensation Committee Interlocks and Insider Participation” and “Certain Relationships and Related Transactions” in our definitive Proxy Statement relating to our 2018 annual meeting of shareholders to be held on May 24, 2018. The Proxy Statement will be filed with the SEC no later than April 30, 2018.

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

The information required in this Item 12 is incorporated by reference to all information under the captions “Security Ownership of Directors and Certain Executive Officers,” “Security Ownership of Certain Beneficial Owners,” “Equity Compensation Plan Information” and “Executive Compensation”in our definitive Proxy Statement relating to our 2018 annual meeting of shareholders to be held on May 24, 2018. The Proxy Statement will be filed with the SEC no later than April 30, 2018.

ITEM 13. ***CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE***

The information required in this Item 13 is incorporated by reference to all information under the captions “Role of the Board; Corporate Governance Matters,” “Committees of the Board” and “Certain Relationships and Related Transactions”in our definitive Proxy Statement relating to our 2018 annual meeting of shareholders to be held on May 24, 2018. The Proxy Statement will be filed with the SEC no later than April 30, 2018.

ITEM 14. ***PRINCIPAL ACCOUNTING FEES AND SERVICES***

The information required in this Item 14 is incorporated by reference to all information under the caption “Other Audit Information”in our definitive Proxy Statement relating to our 2018 annual meeting of shareholders to be held on May 24, 2018. The Proxy Statement will be filed with the SEC no later than April 30, 2018.

PART IV

ITEM 15. ***EXHIBITS, FINANCIAL STATEMENT SCHEDULES***

(a) Documents filed as a part of this Annual Report:

1. *Consolidated Financial Statements*

The following consolidated financial statements and notes thereto are filed as part of this Annual Report:

Report of Independent Registered Public Accounting Firm

Flowserve Corporation Consolidated Financial Statements:

Consolidated Balance Sheets at December 31, 2017 and 2016

For each of the three years in the period ended December 31, 2017:

Consolidated Statements of Income

Consolidated Statements of Comprehensive Income

Consolidated Statements of Shareholders’ Equity

Consolidated Statements of Cash Flows

Notes to Consolidated Financial Statements

2. *Consolidated Financial Statement Schedules*

The following consolidated financial statement schedule is filed as part of this Annual Report:

Financial statement schedules not included in this Annual Report have been omitted because they are not applicable or the required information is shown in the consolidated financial statements or notes thereto.

3. *Exhibits*

Exhibit No.	Description
3.1	Restated Certificate of Incorporation of Flowserve Corporation (incorporated by reference to Exhibit 3.1 to the Registrant's Quarterly Report on Form 10-Q (File No. 001-13179) for the quarter ended June 30, 2013).
3.2	Flowserve Corporation By-Laws, as amended and restated effective May 18, 2017 (incorporated by reference to Exhibit 3.1 to the Registrant's Current Report on Form 8-K (File No. 001-13179) dated May 18, 2017).
4.1	Senior Indenture, dated September 11, 2012, by and between Flowserve Corporation and U.S. Bank National Association, as trustee (incorporated by reference to Exhibit 4.1 to the Registrant's Current Report on Form 8-K (File No. 001-13179) dated September 11, 2012).
4.2	First Supplemental Indenture, dated September 11, 2012, by and among Flowserve Corporation, certain of its subsidiaries and U.S. Bank National Association, as trustee (incorporated by reference to Exhibit 4.2 to the Registrant's Current Report on Form 8-K (File No. 001-13179) dated September 11, 2012).

Exhibit No.	Description
4.3	Second Supplemental Indenture, dated November 1, 2013, by and among Flowserve Corporation, certain of its subsidiaries and U.S. Bank National Association, as trustee (incorporated by reference to Exhibit 4.2 to the Registrant's Current Report on Form 8-K (File No. 001-13179) dated November 1, 2013).
4.4	Third Supplemental Indenture, dated March 17, 2015, by and among Flowserve Corporation, certain of its subsidiaries and U.S. Bank National Association, as trustee (incorporated by reference to Exhibit 4.2 to the Registrant's Current Report on Form 8-K dated March 17, 2015).
10.1	Credit Agreement, dated August 20, 2012, among Flowserve Corporation, Bank of America, N.A., as swingline lender, letter of credit issuer and administrative agent and the other lenders referred to therein (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K (File No. 001-13179) dated August 20, 2012).
10.2	First Amendment to Credit Agreement, dated October 4, 2013, among Flowserve Corporation, Bank of America, N.A., as administrative agent, and the other lenders referred to therein (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K (File No. 001-13179) dated October 4, 2013).
10.3	Second Amendment to Credit Agreement, dated October 14, 2015, among Flowserve Corporation, Bank of America, N.A., as administrative agent, and the other lenders referred to therein (incorporated by reference to Exhibit 10.1 to the Registrants' Current Report on Form 8-K (File No. 001-13179) dated October 19, 2015).
10.4+	Third Amendment to Credit Agreement, dated December 17, 2015, among Flowserve Corporation, Bank of America, N.A., as administrative agent, and the other lenders referred to therein.
10.5	Fourth Amendment to Credit Agreement, dated June 30, 2017, among Flowserve Corporation, Bank of America, N.A., as administrative agent, and the other lenders referred to therein (incorporated by reference to Exhibit 10.1 to the Registrants' Current Report on Form 8-K dated June 30, 2017).
10.6	Amended and Restated Flowserve Corporation Director Cash Deferral Plan, effective January 1, 2009 (incorporated by reference to Exhibit 10.7 to the Registrant's Annual Report on Form 10-K (File No. 001-13179) for the year ended December 31, 2008).*
10.7	Amended and Restated Flowserve Corporation Director Stock Deferral Plan, dated effective January 1, 2009 (incorporated by reference to Exhibit 10.8 to the Registrant's Annual Report on Form 10-K (File No. 001-13179) for the year ended December 31, 2008).*
10.8	Trust for Non-Qualified Deferred Compensation Benefit Plans, dated February 11, 2011 (incorporated by reference to Exhibit 10.8 to the Registrant’s Annual Report on Form 10-K (File No. 001-13179) for the year ended December 31, 2010).*
10.9	Flowserve Corporation Deferred Compensation Plan (incorporated by reference to Exhibit 10.23 to the Registrant's Annual Report on Form 10-K (File No. 001-13179) for the year ended December 31, 2000).*
10.10	Amendment No. 1 to the Flowserve Corporation Deferred Compensation Plan, as amended and restated, effective June 1, 2000 (incorporated by reference to Exhibit 10.50 to the Registrant's Annual Report on Form 10-K (File No. 001-13179) for the year ended December 31, 2002).*
10.11	Amendment to the Flowserve Corporation Deferred Compensation Plan, dated December 14, 2005 (incorporated by reference to Exhibit 10.70 to the Registrant's Annual Report on Form 10-K (File No. 001-13179) for the year ended December 31, 2004).*
10.12	Amendment No. 3 to the Flowserve Corporation Deferred Compensation Plan, as amended and restated effective June 1, 2000 (incorporated by reference to Exhibit 10.22 to the Registrant's Annual Report on Form 10-K (File No. 001-13179) for the year ended December 31, 2007).*
10.13	Flowserve Corporation Senior Management Retirement Plan, amended and restated effective January 1, 2008 (incorporated by reference to Exhibit 10.42 to the Registrant's Annual Report on Form 10-K (File No. 001-13179) for the year ended December 31, 2007).*
10.14	Flowserve Corporation Supplemental Executive Retirement Plan, amended and restated effective November 12, 2007 (incorporated by reference to Exhibit 10.43 to the Registrant's Annual Report on Form 10-K (File No. 001-13179) for the year ended December 31, 2007).*
10.15	Flowserve Corporation Equity and Incentive Compensation Plan (incorporated by reference to Appendix A to the Registrant's Proxy Statement on Schedule 14A (File No. 001-13179) dated April 3, 2009).*
10.16	Form of Restrictive Covenants Agreement for Officers (incorporated by reference to Exhibit 10.1 to the Registrant's Current Report on Form 8-K (File No. 001-13179) dated as of March 9, 2006).*
10.17	Form of Indemnification Agreement for all Directors and Officers (incorporated by reference to Exhibit 10.47 to the Registrant’s Annual Report on Form 10-K (File No. 001-13179) for the year ended December 31, 2015).

Exhibit No.	Description
10.18	Offer Letter, dated as of February 6, 2017, by and between Flowserve Corporation and R. Scott Rowe (incorporated by reference to Exhibit 10.1 to the Registrant’s Current Report on Form 8-K (File No. 001-13179) dated as of February 8, 2017).*
10.19	Separation Agreement and Release, dated as of February 26, 2017 by and between Flowserve Corporation and Karyn F. Ovelman (incorporated by reference to Exhibit 10.1 to the Registrant's Quarterly Report on Form 10-Q (File No. 001-13179) dated as of April 30, 2017).*
10.20	Flowserve Corporation Change In Control Severance Plan, effective February 14, 2017 (incorporated by reference to Exhibit 10.42 to the Registrant’s Annual Report on Form 10-K (File No. 001-13179) for the year ended December 31, 2016).*
10.21	Flowserve Corporation Officer Severance Plan, as amended and restated effective February 14, 2017 (incorporated by reference to Exhibit 10.43 to the Registrant’s Annual Report on Form 10-K (File No. 001-13179) for the year ended December 31, 2016).*
10.22	Flowserve Corporation Annual Incentive Plan, as amended and restated effective February 14, 2017 (incorporated by reference to Exhibit 10.44 to the Registrant’s Annual Report on Form 10-K (File No. 001-13179) for the year ended December 31, 2016).*
10.23	2007 Flowserve Corporation Long-Term Stock Incentive Plan, as amended and restated effective February 14, 2017 (incorporated by reference to Exhibit 10.45 to the Registrant’s Annual Report on Form 10-K (File No. 001-13179) for the year ended December 31, 2016).*
10.24	Flowserve Financial Management Code of Ethics adopted by the Flowserve Corporation principal executive officer and CEO, principal financial officer and CFO, principal accounting officer and controller, and other senior financial managers (incorporated by reference to Exhibit 14.1 to the Registrant's Annual Report on Form 10-K (File No. 001-13179) for the year ended December 31, 2002).
21.1+	Subsidiaries of the Registrant.
23.1+	Consent of PricewaterhouseCoopers LLP.
31.1+	Certification of Principal Executive Officer pursuant to Exchange Act Rules 13a-14(a) and 15d-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2+	Certification of Principal Financial Officer pursuant to Exchange Act Rules 13a-14(a) and 15d-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1++	Certification of Principal Executive Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
32.2++	Certification of Principal Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101.INS	XBRL Instance Document
101.SCH	XBRL Taxonomy Extension Schema Document
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document
101.LAB	XBRL Taxonomy Extension Label Linkbase Document
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document

* Management contracts and compensatory plans and arrangements required to be filed as exhibits to this Annual Report on Form 10-K.

\+ Filed herewith.

++ Furnished herewith.

ITEM 16. FORM 10-K SUMMARY

Not applicable.

SIGNATURES

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

FLOWSERVE CORPORATION

By: /s/ R. Scott Rowe
R. Scott Rowe
President and Chief Executive Officer

Date: February 28, 2018

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

Signature	Title	Date
/s/ Roger L. Fix Roger L. Fix	Non-Executive Chairman of the Board	February 28, 2018
/s/ R. Scott Rowe R. Scott Rowe	President, Chief Executive Officer and Director (Principal Executive Officer)	February 28, 2018
/s/ Lee S. Eckert Lee S. Eckert	Senior Vice President and Chief Financial Officer (Principal Financial and Accounting Officer)	February 28, 2018
/s/ Leif E. Darner Leif E. Darner	Director	February 28, 2018
/s/ Gayla J. Delly Gayla J. Delly	Director	February 28, 2018
/s/ Ruby R. Chandy Ruby R. Chandy	Director	February 28, 2018
/s/ John R. Friedery John R. Friedery	Director	February 28, 2018
/s/ Joseph E. Harlan Joseph E. Harlan	Director	February 28, 2018
/s/ Rick J. Mills Rick J. Mills	Director	February 28, 2018
/s/ David E. Roberts David E. Roberts	Director	February 28, 2018

FLOWSERVE CORPORATION

Schedule II — Valuation and Qualifying Accounts

For the Years Ended December 31, 2017, 2016 and 2015

Description	Balance at Beginning of Year	Additions Charged to Cost and Expenses	Additions Charged to Other Accounts— Acquisitions and Related Adjustments	Deductions From Reserve	Balance at End of Year
			(Amounts in thousands)		
Year Ended December 31, 2017					
Allowance for doubtful accounts(a):	$ 51,920	14,508	—	(7,315)	$ 59,113
Deferred tax asset valuation allowance(b):	36,191	86,694	2,595	(6,171)	119,309
Year Ended December 31, 2016					
Allowance for doubtful accounts(a) (c):	43,935	12,045	—	(4,060)	51,920
Deferred tax asset valuation allowance(b):	24,725	12,883	(67)	(1,350)	36,191
Year Ended December 31, 2015					
Allowance for doubtful accounts(a):	25,469	19,624	151	(1,309)	43,935
Deferred tax asset valuation allowance(b):	15,378	18,548	(3,596)	(5,605)	24,725

(a) Deductions from reserve represent accounts written off and recoveries.

(b) Deductions from reserve result from the expiration or utilization of net operating losses and foreign tax credits previously reserved.

(c) Excludes $73.5 million charge to fully reserve for accounts receivables with our primary Venezuelan customer that are classified as long-term within other assets, net on our consolidated balance sheet as disclosed in Note 1 of this Annual Report on Form 10-K for the year ended December 31, 2017.

EXHIBIT 10.4

FLOWSERVE CORPORATION
AMENDMENT TO CREDIT AGREEMENT

THIRD AMENDMENT TO CREDIT AGREEMENT

THIS THIRD AMENDMENT TO CREDIT AGREEMENT, dated as of December 17, 2015 (this "Amendment"), is entered into among FLOWSERVE CORPORATION, a New York corporation (the "Borrower"), the Lenders party hereto and BANK OF AMERICA, N.A., as Administrative Agent for the Lenders (in such capacity, the "Administrative Agent"). Capitalized terms used herein and not otherwise defined shall have the meanings ascribed thereto in the Credit Agreement (as defined below).

RECITALS

WHEREAS, the Borrower, the Lenders and the Administrative Agent are parties to that certain Credit Agreement, dated as of August 20, 2012 (as amended or modified from time to time, the "Credit Agreement"); and

WHEREAS, the parties hereto have agreed to amend the Credit Agreement as provided herein.

NOW, THEREFORE, in consideration of the agreements contained herein, and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the parties hereto agree as follows:

AGREEMENT

1. Amendments.

(a) The definition of "Consolidated EBITDA" in Section 1.01 of the Credit Agreement is hereby amended to read as follows:

"Consolidated EBITDA" means, for any period, Consolidated Net Income for such period, plus (a) without duplication and to the extent deducted in determining such Consolidated Net Income, the sum of (i) Consolidated Interest Charges for such period, (ii) consolidated income tax expense for such period, (iii) all amounts attributable to depreciation and amortization for such period, (iv) any extraordinary losses or extraordinary non-cash charges for such period, (v) the amount of premium payments paid by the Borrower or its Subsidiaries, and charges in respect of unamortized fees and expenses, in each case associated with the repayment of Indebtedness, (vi) charges in respect of unamortized fees and expenses associated with the prepayment of loans and termination of commitments under the Existing Credit Agreement, (vii) the amount of post-retirement health benefits accrued in such period less the amount of post-retirement health benefits paid in such period, in an amount of up to $5,000,000, (viii) expenses relating to stock-based compensation plans resulting from the application of Financial Accounting Standards Board Statement No. 123R and (ix) Cash Restructuring Expenses during such period not to exceed the Cash Restructuring Limit (provided that such Cash Restructuring Expenses are reasonably identified and set forth in the Compliance Certificate) and minus (b) without duplication and to the extent included in determining such Consolidated Net Income, any extraordinary gains for such period, all determined on a consolidated basis in accordance with GAAP.

(b) The following definitions are hereby added to Section 1.01 of the Credit Agreement in the appropriate alphabetical order to read as follows:

FLOWSERVE CORPORATION
AMENDMENT TO CREDIT AGREEMENT

"Cash Restructuring Expenses" means restructuring and/or realignment expenses as disclosed in the Borrower's realignment footnote(s) published within its financial statements and filed with the SEC.

"Cash Restructuring Limit" means, with respect to any four fiscal quarter period, $150,000,000; provided that (i) to the extent Cash Restructuring Expenses added back in the calculation of Consolidated EBITDA for any four fiscal quarter period are less than $150,000,000, such unused amount (not to exceed $75,000,000) may be carried forward to increase the Cash Restructuring Limit in the following four fiscal quarter period and (ii) the aggregate amount of all Cash Restructuring Expenses added back in the calculation of Consolidated EBITDA may not exceed $450,000,000 during the term of this Agreement.

2. Effectiveness; Conditions Precedent. This Amendment shall be effective upon (i) receipt by the Administrative Agent of copies of this Amendment duly executed by the Borrower and the Required Lenders and (ii) Borrower's payment of all fees, charges and disbursements of counsel to the Administrative Agent (directly to such counsel if requested by the Administrative Agent) to the extent invoiced prior to or on the date hereof, plus such additional amounts of such fees, charges and disbursements as shall constitute its reasonable estimate of such fees, charges and disbursements incurred or to be incurred by it through the closing proceedings (provided that such estimate shall not thereafter preclude a final settling of accounts between the Borrower and the Administrative Agent).

3. Ratification of Credit Agreement. The Borrower acknowledges and consents to the terms set forth herein and agrees that this Amendment does not impair, reduce or limit any of its obligations under the Loan Documents, as amended hereby. This Amendment is a Loan Document.

4. Authority/Enforceability. The Borrower represents and warrants as follows:

(a) It has taken all necessary action to authorize the execution, delivery and performance of this Amendment.

(b) This Amendment has been duly executed and delivered by the Borrower and constitutes its legal, valid and binding obligations, enforceable in accordance with its terms, except as may be limited by applicable Debtor Relief Laws or by equitable principles relating to enforceability.

(c) No action, consent or approval of, registration or filing with or any other action by any Governmental Authority is or will be required in connection with the execution, delivery or performance by, or enforcement against, the Borrower, except for such as have been made or obtained and are in full force and effect.

(d) The execution and delivery of this Amendment does not (i) violate the terms of its Organization Documents or (ii) violate any Law.

5. Representations and Warranties of the Borrower. The Borrower represents and warrants to the Lenders that after giving effect to this Amendment (a) the representations and warranties set forth in Article VI of the Credit Agreement are true and correct in all material respects (or, if such representation or warranty is qualified by materiality or Material Adverse Effect, it shall be true and correct in all respects as drafted) as of the date hereof, except to the extent that such representations and warranties specifically refer

to an earlier date, in which case they shall be true and correct in all material respects (or, if such representation or warranty is qualified by materiality or Material Adverse Effect, it shall be true and correct in all respects as drafted) as of such earlier date, and (b) no Default exists.

6. Counterparts/Facsimile. This Amendment may be executed in any number of counterparts, each of which when so executed and delivered shall be an original, but all of which shall constitute one and the same instrument. Delivery of executed counterparts of this Amendment by facsimile or other secure electronic format (.pdf) shall be effective as an original.

7. GOVERNING LAW. THIS AMENDMENT SHALL BE GOVERNED BY, AND CONSTRUED IN ACCORDANCE WITH, THE LAWS OF THE STATE OF NEW YORK.

8. Successors and Assigns. This Amendment shall be binding upon and inure to the benefit of the parties hereto and their respective successors and assigns.

9. Headings. The headings of the sections hereof are provided for convenience only and shall not in any way affect the meaning or construction of any provision of this Amendment.

10. Severability. If any provision of this Amendment is held to be illegal, invalid or unenforceable, (a) the legality, validity and enforceability of the remaining provisions of this Amendment shall not be affected or impaired thereby and (b) the parties shall endeavor in good faith negotiations to replace the illegal, invalid or unenforceable provisions with valid provisions the economic effect of which comes as close as possible to that of the illegal, invalid or unenforceable provisions. The invalidity of a provision in a particular jurisdiction shall not invalidate or render unenforceable such provision in any other jurisdiction.

11. FATCA Certification. For purposes of determining withholding Taxes imposed under FATCA, from and after the date hereof, the Borrower and the Administrative Agent shall treat (and the Lenders hereby authorize the Administrative Agent to treat) the Obligations under the Credit Agreement as not qualifying as a “grandfathered obligation” within the meaning of Treasury Regulation Section 1.1471-2(b)(2)(i).

12. THIS AMENDMENT AND THE OTHER LOAN DOCUMENTS REPRESENT THE FINAL AGREEMENT AMONG THE PARTIES AND MAY NOT BE CONTRADICTED BY EVIDENCE OF PRIOR, CONTEMPORANEOUS, OR SUBSEQUENT ORAL AGREEMENTS OF THE PARTIES. THERE ARE NO UNWRITTEN ORAL AGREEMENTS AMONG THE PARTIES.

[remainder of page intentionally left blank]

FLOWSERVE CORPORATION
AMENDMENT TO CREDIT AGREEMENT

Each of the parties hereto has caused a counterpart of this Amendment to be duly executed and delivered as of the date first above written.

BORROWER: FLOWSERVE CORPORATION,
a New York corporation

By: /s/ John E. Roueche III
Name: John E. Roueche III
Title: Vice President – Investor Relations and Treasurer

EXHIBIT 10.4

FLOWSERVE CORPORATION
AMENDMENT TO CREDIT AGREEMENT

ADMINISTRATIVE
AGENT: BANK OF AMERICA, N.A.,
as Administrative Agent

By: /s/ Darleen R DiGrazia
Name: Darleen R DiGrazia
Title: Vice President

FLOWSERVE CORPORATION
AMENDMENT TO CREDIT AGREEMENT

LENDERS: BANK OF AMERICA, N.A.,
as a Lender, L/C Issuer and Swing Line Lender

By: /s/ Christopher Wozniak

Name: Christopher Wozniak
Title: Vice President

FLOWSERVE CORPORATION
AMENDMENT TO CREDIT AGREEMENT

JPMORGAN CHASE BANK, N.A.,
as a Lender and L/C Issuer

By:/s/ Maria Riaz

Name: Maria Riaz
Title: Vice President

FLOWSERVE CORPORATION
AMENDMENT TO CREDIT AGREEMENT

WELLS FARGO BANK, NATIONAL ASSOCIATION,
as a Lender and L/C Issuer

By: /s/ Reginald M. Goldsmith, III
Name: Reginald M. Goldsmith, III
Title: Managing Director

FLOWSERVE CORPORATION
AMENDMENT TO CREDIT AGREEMENT

CREDIT AGRICOLE CORPORATE AND INVESTMENT BANK, as a Lender and L/C Issuer

By: /s/ Gordon Yip
Name: GORDON YIP
Title: DIRECTOR

By: /s/ Kaye Ea
Name: KAYE EA
Title: MANAGING DIRECTOR

FLOWSERVE CORPORATION
AMENDMENT TO CREDIT AGREEMENT

BNP PARIBAS,
as a Lender and L/C Issuer

By: /s/ Todd Rogers

Name: Todd Rogers
Title: Director

By: /s/ Thuy Bui

Name: Thuy Bui
Title: Vice President

FLOWSERVE CORPORATION
AMENDMENT TO CREDIT AGREEMENT

THE BANK OF TOKYO-MITSUBISHI UFJ, LTD.,
as a Lender

By: /s/ Thomas J. Sterr

Name: Thomas J. Sterr
Title: Authorized Signatory

FLOWSERVE CORPORATION
AMENDMENT TO CREDIT AGREEMENT

MIZUHO BANK, LTD.,
as a Lender

By: /s/ Donna DeMagistris

Name: Donna DeMagistris
Title: Authorized Signatory

FLOWSERVE CORPORATION
AMENDMENT TO CREDIT AGREEMENT

MIZUHO BANK (USA),
as a Lender

By: <u>/s/ Donna DeMagistris</u>

Name: Donna DeMagistris
Title: Senior Vice President

FLOWSERVE CORPORATION
AMENDMENT TO CREDIT AGREEMENT

COMPASS BANK,
as a Lender

By: /s/ Daniel Feldman
Name: Daniel Feldman
Title: Vice President

FLOWSERVE CORPORATION
AMENDMENT TO CREDIT AGREEMENT

SUMITOMO MITSUI BANKING CORPORATION,
as a Lender

By: /s/ James Weinstein

Name: James Weinstein
Title: Managing Director

FLOWSERVE CORPORATION
AMENDMENT TO CREDIT AGREEMENT

LLOYDS BANK PLC,
as a Lender

By: /s/ Deven Popat

Name: Deven Popat
Title: Senior Vice President

By: /s/ Erin Doherty

Name: Erin Doherty
Title: Assistant Vice President

FLOWSERVE CORPORATION
AMENDMENT TO CREDIT AGREEMENT

PNC BANK, NATIONAL ASSOCIATION,
as a Lender

By: /s/ Christian S. Brown

Name: Christian S. Brown
Title: Managing Director

FLOWSERVE CORPORATION
AMENDMENT TO CREDIT AGREEMENT

BRANCH BANKING AND TRUST COMPANY,
as a Lender

By: /s/ Allen K. King

Name: Allen K. King
Title: Senior Vice President

FLOWSERVE CORPORATION
AMENDMENT TO CREDIT AGREEMENT

U.S. BANK NATIONAL ASSOCIATION,
as a Lender

By: /s/ Robert L Nelson

Name: Robert L. Nelson
Title: SVP

FLOWSERVE CORPORATION
AMENDMENT TO CREDIT AGREEMENT

CITIBANK, N.A.,
as a Lender

By: /s/ Jyothi Narayanan

Name: Jyothi Narayanan
Title: Vice President

FLOWSERVE CORPORATION
AMENDMENT TO CREDIT AGREEMENT

FIFTH THIRD BANK,
as a Lender

By: /s/ Michael H. Keith

Name: Michael H. Keith
Title: Vice President

EXHIBIT 10.4

FLOWSERVE CORPORATION
AMENDMENT TO CREDIT AGREEMENT

THE NORTHERN TRUST COMPANY,
as a Lender

By: /s/ Wicks Barkhausen

Name: Wicks Barkhausen
Title: Vice President

FLOWSERVE CORPORATION
AMENDMENT TO CREDIT AGREEMENT

HSBC BANK USA, N.A.,
as a Lender

By: /s/ Brian B. Myers

Name: Brian B. Myers
Title: SVP Corporate Banking Manager

FLOWSERVE CORPORATION
AMENDMENT TO CREDIT AGREEMENT

FIRST HAWAIIAN BANK,
as a Lender

By: /s/ Todd T. Nitta

Name: Todd T. Nitta
Title: Senior Vice President

EXHIBIT 21.1

SUBSIDIARIES
FLOWSERVE CORPORATION

NAME OF SUBSIDIARY	JURISDICTION OF INCORPORATION	PERCENTAGE OWNERSHIP
APV – ALLGEMEINE PUMPEN-VERTRIEBS GMBH	Germany	100%
ARABIAN SEALS COMPANY, LTD.	Saudi Arabia	40%
AUDCO ITALIANA S.R.L.	Italy	12.5%
AUDCO LIMITED	United Kingdom	100%
BW/IP NEW MEXICO, INC.	United States	100%
CALDER GMBH	Switzerland	100%
COOPERATIE FLOWSERVE W.A.	Netherlands	100%
FLOW HOLDINGS VI C.V.	Netherlands	100%
FLOWCOM INSURANCE COMPANY, INC.	United States	100%
FLOWSERVE - AL RUSHAID COMPANY LTD	Saudi Arabia	51%
FLOWSERVE - SUFA NUCLEAR POWER EQUIPMENT Co, Ltd.	China	45%
FLOWSERVE (AUSTRIA) GMBH	Austria	100%
FLOWSERVE (B) SDN BND.	Brunei	100%
FLOWSERVE (MAURITIUS) CORPORATION	Mauritius	100%
FLOWSERVE (PHILIPPINES), INC.	Philippines	100%
FLOWSERVE (SHANGHAI) LIMITED	China	100%
FLOWSERVE (THAILAND) LIMITED	Thailand	100%
FLOWSERVE / ABAHSAIN FLOW CONTROL CO. LTD.	Saudi Arabia	60%
FLOWSERVE / ABAHSAIN SEAL COMPANY LIMITED	Saudi Arabia	60%
FLOWSERVE AHAUS GMBH	Germany	100%
FLOWSERVE - AL MANSOORI SERVICES COMPANY LTD.	United Arab Emirates	49%
FLOWSERVE AUSTRALIA PTY. LTD.	Australia	100%
FLOWSERVE B.V.	Netherlands	100%
FLOWSERVE BELGIUM N.V.	Belgium	100%
FLOWSERVE BOLIVIA S.R.L.	Bolivia	100%
FLOWSERVE CANADA COOPERATIEF U.A.	Netherlands	100%
FLOWSERVE CANADA CORP.	Canada	100%
FLOWSERVE CANADA HOLDINGS LLC	United States	100%
FLOWSERVE CANADA INTERNATIONAL LLC	United States	100%

NAME OF SUBSIDIARY	JURISDICTION OF INCORPORATION	PERCENTAGE OWNERSHIP
FLOWSERVE CANADA LIMITED PARTNERSHIP	Canada	100%
FLOWSERVE CHILE S.p.A.	Chile	100%
FLOWSERVE COLOMBIA S.A.S.	Colombia	100%
FLOWSERVE CONTROL VALVES GMBH	Austria	100%
FLOWSERVE COOP HOLDINGS LLC	United States	100%
FLOWSERVE CORPORATION	United States	100%
FLOWSERVE CV HOLDINGS LLC	United States	100%
FLOWSERVE CZECH REPUBLIC, S.R.O.	Czech Republic	100%
FLOWSERVE DE MEXICO S DE RL DE CV	Mexico	100%
FLOWSERVE DE VENEZUELA C.C.A.	Venezuela	100%
FLOWSERVE DE VENEZUELA LLC	United States	100%
FLOWSERVE DO BRASIL LTDA.	Brazil	100%
FLOWSERVE DORTMUND GMBH & CO. KG	Germany	100%
FLOWSERVE DORTMUND VERWALTUNGS GMBH	Germany	100%
FLOWSERVE DUTCH CANADA HOLDINGS LLC	United States	100%
FLOWSERVE DUTCH HOLDINGS LLC	United States	100%
FLOWSERVE ECUADOR CIA. LTDA.	Ecuador	100%
FLOWSERVE EMA HOLDINGS B.V.	Netherlands	100%
FLOWSERVE EMA V C.V.	Netherlands	100%
FLOWSERVE ESSEN GMBH	Germany	100%
FLOWSERVE FINLAND OY	Finland	100%
FLOWSERVE FLOW CONTROL BENELUX B.V.	Netherlands	100%
FLOWSERVE FLOW CONTROL GMBH	Germany	100%
FLOWSERVE FLUID MOTION AND CONTROL (SUZHOU) CO., LTD.	China	100%
FLOWSERVE FRANCE HOLDING S.A.S.	France	100%
FLOWSERVE FRANCE S.A.S.	France	100%
FLOWSERVE FSD S.A.S.	France	100%
FLOWSERVE GB LIMITED	United Kingdom	100%
FLOWSERVE GERMANY GMBH	Germany	100%
FLOWSERVE GERMANY HOLDINGS BV	Netherlands	100%
FLOWSERVE GULF FZE	United Arab Emirates	100%

NAME OF SUBSIDIARY	JURISDICTION OF INCORPORATION	PERCENTAGE OWNERSHIP
FLOWSERVE HOLDINGS C.V.	Netherlands	100%
FLOWSERVE HOLDINGS COOPERATIEF W.A.	Netherlands	100%
FLOWSERVE HOLDINGS, INC.	United States	100%
FLOWSERVE HUNGARY SERVICES KFT	Hungary	100%
FLOWSERVE INDIA CONTROLS PVT. LTD.	India	100%
FLOWSERVE INTERNATIONAL B.V.	Netherlands	100%
FLOWSERVE INTERNATIONAL HOLDINGS COOPERATIEF U.A.	Netherlands	100%
FLOWSERVE INTERNATIONAL LIMITED	United Kingdom	100%
FLOWSERVE INTERNATIONAL MIDDLE EAST VALVES LLC	United States	100%
FLOWSERVE INTERNATIONAL, INC.	United States	100%
FLOWSERVE JAPAN CO. LTD.	Japan	100%
FLOWSERVE KAZAKHSTAN LLP	Kazakhstan	100%
FLOWSERVE KOREA LTD.	South Korea	100%
FLOWSERVE KSM CO. LTD.	South Korea	40%
FLOWSERVE LA HOLDINGS S. DE R.L. DE C.V.	Mexico	100%
FLOWSERVE LUXEMBOURG HOLDINGS S.A.R.L.	Luxembourg	100%
FLOWSERVE MANAGEMENT COMPANY	United States	100%
FLOWSERVE MEXICO HOLDINGS LLC	United States	100%
FLOWSERVE MICROFINISH PUMPS PVT. LTD.	India	76%
FLOWSERVE MICROFINISH VALVES PVT. LTD.	India	76%
FLOWSERVE MOROCCO SARL AU	Morocco	100%
FLOWSERVE NETHERLANDS C.V.	Netherlands	100%
FLOWSERVE NETHERLANDS IX C.V.	Netherlands	100%
FLOWSERVE NETHERLANDS LLC	United States	100%
FLOWSERVE NETHERLANDS VIII C.V.	Netherlands	100%
FLOWSERVE NEW ZEALAND LIMITED	New Zealand	100%
FLOWSERVE NORWAY AS	Norway	100%
FLOWSERVE NOVA SCOTIA HOLDING CORP.	Canada	100%
FLOWSERVE PERU S.A.C.	Peru	100%
FLOWSERVE PLEUGER S.A.S.	France	100%

NAME OF SUBSIDIARY	JURISDICTION OF INCORPORATION	PERCENTAGE OWNERSHIP
FLOWSERVE POMPES S.A.S.	France	100%
FLOWSERVE PTE. LTD.	Singapore	100%
FLOWSERVE, S. DE R.L. DE C.V.	Mexico	100%
FLOWSERVE S.A.	Spain	100%
FLOWSERVE S.A.S.	France	100%
FLOWSERVE S.R.L.	Argentina	100%
FLOWSERVE S.r.l.	Italy	100%
FLOWSERVE SALES INTERNATIONAL, S.A.S.	France	100%
FLOWSERVE SIHI HOLDING GmbH	Germany	100%
FLOWSERVE SANMAR LIMITED	India	40%
FLOWSERVE SIHI (ITALY) S.r.L.	Italy	100%
FlOWSERVE SIHI (SCHWEIZ) GMBH	Switzerland	100%
FLOWSERVE SIHI (SPAIN) S.L.	Spain	100%
FLOWSERVE SIHI CZ S.R.O.	Czech Republic	100%
FLOWSERVE SIHI GERMANY GMBH	Germany	100%
FLOWSERVE SIHI ROMANIA SRL	Romania	100%
FLOWSERVE SINGAPORE LLC	United States	100%
FLOWSERVE SIZDIRMAZLIK COZUMLERI TICARET LTD. STI.	Turkey	100%
FLOWSERVE SOLUTIONS (CHENGDU) CO. LTD.	China	100%
FLOWSERVE SOLUTIONS (MALAYSIA) SDN. BHD.	Malaysia	100%
FLOWSERVE SOUTH AFRICA (PROPRIETARY) LIMITED	South Africa	100%
FLOWSERVE SPAIN S.L.	Spain	100%
FLOWSERVE SPI LLC	United States	100%
FLOWSERVE SWEDEN AB	Sweden	100%
FLOWSERVE TREASURY B.V.	Netherlands	100%
FLOWSERVE US INC.	United States	100%
FLOWSERVE VIETNAM CO., LLC	Vietnam	100%
FLOWSERVE XD CHANGSHA PUMP CO., LTD.	China	50%
FLS CV5 HOLDINGS LLC	United States	100%
FLS DUTCH III C.V.	Netherlands	100%
FLS DUTCH IV C.V.	Netherlands	100%
FLS DUTCH VII C.V.	Netherlands	100%
HALBERG MASCHINENBAU GMBH	Germany	100%
HOT TAPPING & PLUGGING C.A.	Venezuela	100%
INDUSTRIAS MEDINA S.A. DE C.V.	Mexico	36.6%

NAME OF SUBSIDIARY	JURISDICTION OF INCORPORATION	PERCENTAGE OWNERSHIP
INGERSOLL-DRESSER PUMPS S.R.L.	Italy	100%
INMOBILIARIA INDUSTRIAL DE LEON S.A. DE C.V.	Mexico	36.6%
INVENSYS FLOW CONTROL AUSTRALIA PTY. LTD.	Australia	100%
KSM Co. Ltd.	Republic of Korea	40%
LIMITORQUE INDIA LIMITED	India	24%
MAQUILADORA INDUSTRIAL DE LEON S.A. DE C.V.	Mexico	36.6%
NAF AB	Sweden	100%
OOO FLOWSERVE	Russian Federation	100%
PMV AUTOMATION AB	Sweden	100%
PT FLOWSERVE	Indonesia	100%
SIHI CHILE S.A.	Chile	50%
SIHI DO BRASIL INDUSTRIA DE SISTEMAS DE BOMBAMENTO LTDA	Brazil	100%
SIHI GROUP B.V.	Netherlands	100%
SIHI PUMPS & SERVICES (THAILAND) LTD.	Thailand	100%
SIHI PUMPS (MALAYSIA) SDN. BHD.	Malaysia	100%
SIHI PUMPS (SHANGHAI) CO.LTD.	China	100%
SIHI PUMPS (TAIWAN) CO. Ltd.	Taiwan	100%
SIHI PUMPS (THAILAND) Ltd.	Thailand	100%
SIHI PUMPS KOREA Ltd.	Republic of Korea	100%
STERLING FLUID SERVICES (UK) Ltd.	United Kingdom	100%
STERLING FLUID SYSTEMS (AUSTRIA) GMBH	Austria	100%
STERLING FLUID SYSTEMS (HUNGARIA) Kft.	Hungary	100%
STERLING FLUID SYSTEMS (POLSKA) Sp.zo.o.	Poland	100%
STERLING FLUID SYSTEMS (UK Group) LTD.	United Kingdom	100%
STERLING FLUID SYSTEMS (UK) LTD.	United Kingdom	100%
STERLING INDUSTRY CONSULT GMBH	Germany	100%
STERLING SIHI (FRANCE) S.A.S.	France	100%
STERLING SIHI (NETHERLANDS) B.V.	Netherlands	100%
STERLING SIHI BELGIUM B.V.B..A.	Belgium	100%
STERLING SIHI BULGARIA EOOD	Bulgaria	100%
THOMPSONS, KELLY & LEWIS PTY. LIMITED	Australia	100%

NAME OF SUBSIDIARY	JURISDICTION OF INCORPORATION	PERCENTAGE OWNERSHIP
VALBART S.R.L.	Italy	100%
WORTHINGTON S.R.L.	Italy	100%
YKV CORPORATION	Japan	15%

EXHIBIT 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Registration Statement on Form S-3 (No. 333-210553) and Form S-8 (Nos. 333-137706, 333-163251, and 333-82081) of Flowserve Corporation of our report dated February 28, 2018, 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
PricewaterhouseCoopers LLP
Dallas, Texas
February 28, 2018

EXHIBIT 31.1

CERTIFICATION OF PRINCIPAL EXECUTIVE OFFICER
PURSUANT TO SECTION 302
OF THE SARBANES-OXLEY ACT OF 2002

I, R. Scott Rowe, certify that:

1. I have reviewed this Annual Report on Form 10-K for the fiscal year ended December 31, 2017 of Flowserve Corporation;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the consolidated financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

(a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

(b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

(c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

(d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

(a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

(b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

/s/ R. Scott Rowe
R. Scott Rowe
President and Chief Executive Officer
(Principal Executive Officer)

Date: February 28, 2018

EXHIBIT 31.2

**CERTIFICATION OF PRINCIPAL FINANCIAL OFFICER
PURSUANT TO SECTION 302
OF THE SARBANES-OXLEY ACT OF 2002**

I, Lee S. Eckert, certify that:

1. I have reviewed this Annual Report on Form 10-K for the fiscal year ended December 31, 2017 of Flowserve Corporation;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the consolidated financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

(a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

(b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

(c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

(d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

(a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

(b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

/s/ Lee S. Eckert

Lee S. Eckert
Senior Vice President and Chief Financial Officer
(Principal Financial and Accounting Officer)

Date: February 28, 2018

EXHIBIT 32.1

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

I, R. Scott Rowe, President and Chief Executive Officer of Flowserve Corporation (the “Company”), certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to my knowledge:

(1) the Annual Report on Form 10-K of the Company for the period ended December 31, 2017, as filed with the Securities and Exchange Commission on the date hereof (the “Annual Report”), fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) the information contained in the Annual Report fairly presents, in all material respects, the consolidated financial condition and results of operations of the Company.

/s/ R. Scott Rowe

R. Scott Rowe
President and Chief Executive Officer
(Principal Executive Officer)

Date: February 28, 2018

EXHIBIT 32.2

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350
AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

I, Lee S. Eckert, Senior Vice President and Chief Financial Officer of Flowserve Corporation (the “Company”), certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that to my knowledge:

(1) the Annual Report on Form 10-K of the Company for the period ended December 31, 2017, as filed with the Securities and Exchange Commission on the date hereof (the “Annual Report”), fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

(2) the information contained in the Annual Report fairly presents, in all material respects, the consolidated financial condition and results of operations of the Company.

/s/ Lee S. Eckert

Lee S. Eckert

Senior Vice President and Chief Financial Officer
(Principal Financial and Accounting Officer)

Date: February 28, 2018