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

FORM 10–K

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

For the Fiscal Year Ended September 30, 2018
OR

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

For The Transition Period From ________ To
Commission File Number 001-13836

JOHNSON CONTROLS INTERNATIONAL PLC
(Exact name of registrant as specified in its charter)

Ireland	**98-0390500**
(Jurisdiction of Incorporation)	(I.R.S. Employer Identification No.)

One Albert Quay
Cork, Ireland
(Address of principal executive offices)
353-21-423-5000
(Registrant's telephone number)

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

Title of Each Class	Name of Each Exchange on Which Registered
Ordinary Shares, Par Value $0.01	New York Stock Exchange

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

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

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

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

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

Indicate by check mark 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. ☐

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

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

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

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

As of March 31, 2018, the aggregate market value of Johnson Controls International plc Common Stock held by non-affiliates of the registrant was approximately $32.6 billion based on the closing sales price as reported on the New York Stock Exchange. As of October 31, 2018, 924,058,960 ordinary shares, par value $0.01 per share, were outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the definitive Proxy Statement to be delivered to shareholders in connection with the annual general meeting of shareholders to be held on March 6, 2019 are incorporated by reference into Part III.

JOHNSON CONTROLS INTERNATIONAL PLC

Index to Annual Report on Form 10-K

Year Ended September 30, 2018

CAUTIONARY STATEMENTS FOR FORWARD-LOOKING INFORMATION

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

The Company has made statements in this document that are forward-looking and therefore are subject to risks and uncertainties. All statements in this document other than statements of historical fact are, or could be, "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995. In this document, statements regarding Johnson Controls' future financial position, sales, costs, earnings, cash flows, other measures of results of operations, synergies and integration opportunities, capital expenditures and debt levels are forward-looking statements. Words such as "may," "will," "expect," "intend," "estimate," "anticipate," "believe," "should," "forecast," "project" or "plan" and terms of similar meaning are also generally intended to identify forward-looking statements. However, the absence of these words does not mean that a statement is not forward-looking. Johnson Controls cautions that these statements are subject to numerous important risks, uncertainties, assumptions and other factors, some of which are beyond Johnson Controls' control, that could cause Johnson Controls' actual results to differ materially from those expressed or implied by such forward-looking statements, including, among others, risks related to: any delay or inability of Johnson Controls to realize the expected benefits and synergies of recent portfolio transactions such as the merger with Tyco International plc ("Tyco"), the spin-off of Adient, changes in tax laws (including but not limited to the Tax Cuts and Jobs Act enacted in December 2017), regulations, rates, policies or interpretations, the loss of key senior management, the tax treatment of recent portfolio transactions, significant transaction costs and/or unknown liabilities associated with such transactions, the outcome of actual or potential litigation relating to such transactions, the risk that disruptions from recent transactions will harm Johnson Controls' business, the strength of the U.S. or other economies, changes to laws or policies governing foreign trade, including increased tariffs or trade restrictions, automotive vehicle production levels, mix and schedules, energy and commodity prices, the availability of raw materials and component products, currency exchange rates, cancellation of or changes to commercial arrangements, and with respect to the divestiture of the Power Solutions business, the expected financial impact and timing of the Power Solutions divestiture, whether and when the required regulatory approvals for the Power Solutions disposal will be obtained, the possibility that closing conditions for the Power Solutions divestiture may not be satisfied or waived, and whether the strategic benefits of the Power Solutions transaction can be achieved. A detailed discussion of risks related to Johnson Controls' business is included in the section entitled "Risk Factors" (refer to Part I, Item 1A, of this Annual Report on Form 10-K). The forward-looking statements included in this document are made only as of the date of this document, unless otherwise specified, and, except as required by law, Johnson Controls assumes no obligation, and disclaims any obligation, to update such statements to reflect events or circumstances occurring after the date of this document.

PART I

ITEM 1 BUSINESS

General

Johnson Controls International plc, headquartered in Cork, Ireland, is a global diversified technology and multi industrial leader serving a wide range of customers in more than 150 countries. The Company creates intelligent buildings, efficient energy solutions, integrated infrastructure and next generation transportation systems that work seamlessly together to deliver on the promise of smart cities and communities. The Company is committed to helping our customers win and creating greater value for all of its stakeholders through strategic focus on our buildings and energy growth platforms.

Johnson Controls was originally incorporated in the state of Wisconsin in 1885 as Johnson Electric Service Company to manufacture, install and service automatic temperature regulation systems for buildings. The Company was renamed to Johnson Controls, Inc. in 1974. In 1978, the Company acquired Globe-Union, Inc., a Wisconsin-based manufacturer of automotive batteries for both the replacement and original equipment markets. The Company entered the automotive seating industry in 1985 with the acquisition of Michigan-based Hoover Universal, Inc. In 2005, the Company acquired York International, a global supplier of heating, ventilating, air-conditioning ("HVAC") and refrigeration equipment and services. In 2014, the Company acquired Air Distribution Technologies, Inc. ("ADTi"), one of the largest independent providers of air distribution and ventilation products in North America. On October 1, 2015, the Company formed a joint venture with Hitachi to expand its building related product offerings.

In the fourth quarter of fiscal 2016, Johnson Controls, Inc. ("JCI Inc.") and Tyco completed their combination with JCI Inc. merging with a wholly owned, indirect subsidiary of Tyco (the "Merger"). Following the Merger, Tyco changed its name to "Johnson Controls International plc" and JCI Inc. is a wholly-owned subsidiary of Johnson Controls International plc. The Merger was accounted for as a reverse acquisition using the acquisition method of accounting in accordance with Accounting Standards Codification ("ASC") 805, "Business Combinations." JCI Inc. was the accounting acquirer for financial reporting purposes. Accordingly, the historical consolidated financial statements of JCI Inc. for periods prior to this transaction are considered to be the historic financial statements of the Company. Refer to Note 2, "Merger Transaction," of the notes to consolidated financial statements for additional information.

The acquisition of Tyco brings together best-in-class product, technology and service capabilities across controls, fire, security, HVAC and power solutions, to serve various end-markets including large institutions, commercial buildings, retail, industrial, small business and residential. The combination of the Tyco and Johnson Controls buildings platforms creates opportunities for near-term growth through cross-selling, complementary branch and channel networks, and expanded global reach for established businesses. The new Company benefits by combining innovation capabilities and pipelines involving new products, advanced solutions for smart buildings and cities, value-added services driven by advanced data and analytics.

On October 31, 2016, the Company completed the spin-off of its Automotive Experience business by way of the transfer of the Automotive Experience Business from Johnson Controls to Adient plc ("Adient") and the issuance of ordinary shares of Adient directly to holders of Johnson Controls ordinary shares on a pro rata basis. Prior to the open of business on October 31, 2016, each of the Company's shareholders received one ordinary share of Adient plc for every 10 ordinary shares of Johnson Controls held as of the close of business on October 19, 2016, the record date for the distribution. Company shareholders received cash in lieu of fractional shares of Adient, if any. Following the separation and distribution, Adient plc is now an independent public company trading on the New York Stock Exchange ("NYSE") under the symbol "ADNT." The Company did not retain any equity interest in Adient plc. Adient's historical financial statements are reflected in the Company's consolidated financial statements as a discontinued operation.

The Building Technologies & Solutions ("Buildings") business is a global market leader in engineering, developing, manufacturing and installing building products and systems around the world, including HVAC equipment, HVAC controls, energy-management systems, security systems, fire detection systems and fire suppression solutions. The Buildings business further serves customers by providing technical services (in the HVAC, security and fire-protection space), energy-management consulting and data-driven solutions via its data-enabled business. Finally, the Company has a strong presence in the North American residential air conditioning and heating systems market and is a global market leader in industrial refrigeration products.

The Power Solutions business is a leading global supplier of lead-acid automotive batteries for virtually every type of passenger car, light truck and utility vehicle. The Company serves both automotive original equipment manufacturers ("OEMs") and the general vehicle battery aftermarket. The Company also supplies advanced battery technologies to power start-stop, hybrid and electric vehicles.

On November 13, 2018, the Company entered into a Stock and Asset Purchase Agreement (“Purchase Agreement”) with BCP Acquisitions LLC (“Purchaser”). The Purchaser is a newly-formed entity controlled by investment funds managed by Brookfield Capital Partners LLC. Pursuant to the Purchase Agreement, on the terms and subject to the conditions therein, the Company has agreed to sell, and Purchaser has agreed to acquire, the Company’s Power Solutions business for a purchase price of $13.2 billion. Net cash proceeds are expected to be $11.4 billion after tax and transaction-related expenses. The transaction is expected to close by June 30, 2019, subject to customary closing conditions and required regulatory approvals. The operating results of the Power Solutions business will be reported as a discontinued operation beginning in the first quarter of fiscal 2019.

Products/Systems and Services

Building Technologies & Solutions

Building Technologies & Solutions sells its integrated control systems, security systems, fire-detection systems, equipment and services primarily through the Company’s extensive global network of sales and service offices, with operations in approximately 70 countries. Significant sales are also generated through global third-party channels, such as distributors of air-conditioning, security, fire-detection and commercial HVAC systems. The Company’s large base of current customers leads to significant repeat business for the retrofit and replacement markets. In addition, the new commercial construction market is also important. Trusted Buildings brands, such as YORK®, Hitachi Air Conditioning, *Metasys*®, Ansul, *Ruskin*®, Titus®, Frick®, PENN®, Sabroe®, Simplex® and Grinnell® give the Company the most diverse portfolio in the building technology industry.

In fiscal 2018, approximately 26% of its sales originated from its service offerings. In fiscal 2018, Building Technologies & Solutions accounted for 75% of the Company’s consolidated net sales.

Power Solutions

Power Solutions services both automotive OEMs and the battery aftermarket by providing advanced battery technology, coupled with systems engineering, marketing and service expertise. The Company is the largest producer of lead-acid automotive batteries in the world, producing and distributing approximately 154 million lead-acid batteries annually in approximately 70 wholly- and majority-owned manufacturing or assembly plants, distribution centers and sales offices in approximately 20 countries worldwide. Investments in new product and process technology have expanded product offerings to absorbent glass mat ("AGM") and enhanced flooded battery ("EFB") technologies that power start-stop vehicles, as well as lithium-ion battery technology for certain hybrid and electric vehicles. The business has also invested to develop sustainable lead and poly recycling operations in the North American and European markets. Approximately 75% of unit sales worldwide in fiscal 2018 were to the automotive replacement market, with the remaining sales to the OEM market.

Power Solutions accounted for 25% of the Company's fiscal 2018 consolidated net sales. Batteries and key components are manufactured at wholly- and majority-owned plants in North America, South America, Asia and Europe.

Competition

Building Technologies & Solutions

The Building Technologies & Solutions business conducts its operations through thousands of individual contracts that are either negotiated or awarded on a competitive basis. Key factors in the award of contracts include system and service performance, quality, price, design, reputation, technology, application engineering capability and construction or project management expertise. Competitors for HVAC equipment, security, fire-detection, fire suppression and controls in the residential and non-residential marketplace include many regional, national and international providers; larger competitors include Honeywell International, Inc.; Siemens Building Technologies, an operating group of Siemens AG; Schneider Electric SA; Carrier Corporation, a subsidiary of United Technologies Corporation; Trane Incorporated, a subsidiary of Ingersoll-Rand Company Limited; Daikin Industries, Ltd.; Lennox International, Inc.; GC Midea Holding Co, Ltd. and Gree Electric Appliances, Inc. In addition to HVAC equipment, Building Technologies & Solutions competes in a highly fragmented HVAC services market, which is dominated by local providers. The loss of any individual contract would not have a material adverse effect on the Company.

Power Solutions

Power Solutions is the principal supplier of batteries to many of the largest merchants in the battery aftermarket, including Advance Auto Parts, AutoZone, Robert Bosch GmbH, DAISA S.A., Costco, O'Reilly/CSK, Interstate Battery System of America and Wal-Mart stores. Automotive batteries are sold throughout the world under private labels and under the Company's brand names (Optima®, Varta®, LTH® and Heliar®) to automotive replacement battery retailers and distributors and to automobile manufacturers as original equipment. The Power Solutions business competes with a number of major U.S. and non-U.S. manufacturers and distributors of lead-acid batteries, as well as a large number of smaller, regional competitors. The Power Solutions business primarily competes in the battery market with Exide Technologies, GS Yuasa Corporation, Camel Group Company Limited, East Penn Manufacturing Company and Banner Batteries GB Limited. The North American, European and Asian lead-acid battery markets are highly competitive. The manufacturers in these markets compete on price, quality, technical innovation, service and warranty.

Backlog

The Company's backlog relating to the Building Technologies & Solutions business is applicable to its sales of systems and services. At September 30, 2018, the backlog was $8.7 billion, of which $8.4 billion is attributable to the field business. The majority of backlog relates to fiscal 2019. At September 30, 2017, the backlog was $8.5 billion, of which $8.2 billion is attributable to the field business. The backlog amount outstanding at any given time is not necessarily indicative of the amount of revenue to be earned in the upcoming fiscal year.

Raw Materials

Raw materials used by the businesses in connection with their operations, including lead, steel, tin, aluminum, urethane chemicals, brass, copper, sulfuric acid, polypropylene and certain flurochemicals used in our fire suppression agents, were readily available during fiscal 2018, and the Company expects such availability to continue. In fiscal 2019, commodity prices could fluctuate throughout the year and could significantly affect the results of operations.

Intellectual Property

Generally, the Company seeks statutory protection for strategic or financially important intellectual property developed in connection with its business. Certain intellectual property, where appropriate, is protected by contracts, licenses, confidentiality or other agreements.

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

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

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

Environmental, Health and Safety Matters

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

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

The Company's operations and facilities have been, and in the future may become, the subject of formal or informal enforcement actions or proceedings for noncompliance with environmental laws and worker safety laws or for the remediation of Company-related substances released into the environment. Such matters typically are resolved with regulatory authorities through commitments to compliance, abatement or remediation programs and, in some cases, payment of penalties. See Item 3, "Legal Proceedings," of this report for a discussion of the Company's potential environmental liabilities.

Environmental Capital Expenditures

The Company's ongoing environmental compliance program often results in capital expenditures. Environmental considerations are a part of all significant capital expenditure decisions; however, expenditures in fiscal 2018 related solely to environmental compliance were not material. It is management's opinion that the amount of any future capital expenditures related solely to environmental compliance will not have a material adverse effect on the Company's financial results or competitive position in any one year.

Government Regulation and Supervision

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

Employees

As of September 30, 2018, the Company employed approximately 122,000 people worldwide, of which approximately 48,000 were employed in the United States and approximately 74,000 were outside the United States. Approximately 31,000 employees are covered by collective bargaining agreements or works councils and we believe that our relations with the labor unions are generally good.

Seasonal Factors

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

Research and Development Expenditures

Refer to Note 1, "Summary of Significant Accounting Policies," of the notes to consolidated financial statements for research and development expenditures.

Available Information

The Company's filings with the U.S. Securities and Exchange Commission ("SEC"), including annual reports on Form 10-K, quarterly reports on Form 10-Q, definitive proxy statements on Schedule 14A, current reports on Form 8-K, and any amendments to those reports filed pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934, are made available free of charge through the Investor Relations section of the Company's Internet website at http://www.johnsoncontrols.com as soon as reasonably practicable after the Company electronically files such material with, or furnishes it to, the SEC. Copies of any materials the Company files with the SEC can also be obtained free of charge through the SEC's website at http://www.sec.gov, at the SEC's Public Reference Room at 100 F Street, N.E., Washington, D.C. 20549, or by calling the SEC's Office of Investor Education and Advocacy at 1-800-732-0330. The Company also makes available, free of charge, its Ethics Policy, Corporate Governance Guidelines, Board of Directors committee charters and other information related to the Company on the Company's Internet website or in printed form upon request. The Company is not including the information contained on the Company's website as a part of, or incorporating it by reference into, this Annual Report on Form 10-K.

ITEM 1A RISK FACTORS

Risks Relating to Business Operations

General economic, credit and capital market conditions could adversely affect our financial performance, our ability to grow or sustain our businesses and our ability to access the capital markets.

We compete around the world in various geographic regions and product markets. Global economic conditions affect each of our primary businesses. As we discuss in greater detail in the specific risk factors for each of our businesses that appear below, any future financial distress in the industries and/or markets where we compete could negatively affect our revenues and financial performance in future periods, result in future restructuring charges, and adversely impact our ability to grow or sustain our businesses.

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

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

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

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

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

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

Decreased demand from our customers in the automotive industry may adversely affect our results of operations.

Our financial performance in the Power Solutions business depends, in part, on conditions in the automotive industry. Sales to OEMs accounted for approximately 25% of the total sales of the Power Solutions business in fiscal 2018. Declines in the North American, European and Asian automotive production levels could reduce our sales and adversely affect our results of operations. In addition, if any OEMs reach a point where they cannot fund their operations, we may incur write-offs of accounts receivable, incur impairment charges or require additional restructuring actions beyond our current restructuring plans, which, if significant, would have a material adverse effect on our business and results of operations.

An inability to successfully respond to competition and pricing pressure from other companies in the Power Solutions business may adversely impact our business.

Our Power Solutions business competes with a number of major U.S. and non-U.S. manufacturers and distributors of lead-acid batteries, as well as a large number of smaller, regional competitors. The North American, European and Asian lead-acid battery markets are highly competitive. The manufacturers in these markets compete on price, quality, technical innovation, service and warranty. If we are unable to remain competitive and maintain market share in the regions and markets we serve, our business, financial condition and results of operations may be adversely affected.

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

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

In our Power Solutions business, lead is a major component of lead-acid batteries, and the price of lead may be highly volatile. We attempt to manage the impact of changing lead prices through the recycling of used batteries returned to us by our aftermarket customers, commercial terms and commodity hedging programs. Our ability to mitigate the impact of lead price changes can be impacted by many factors, including customer negotiations, inventory level fluctuations and sales volume/mix changes, any of which could have an adverse effect on our results of operations.

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

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

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

Our future success depends on our ability to develop or acquire, manufacture and bring competitive, and increasingly complex, products and services to market quickly and cost-effectively. Our ability to develop or acquire new products and services requires the investment of significant resources. These acquisitions and development efforts divert resources from other potential investments in our businesses, and they may not lead to the development of new technologies, products or services on a timely basis. Moreover, as we introduce new products, we may be unable to detect and correct defects in the design of a product or in its application to a specified use, which could result in loss of sales or delays in market acceptance. Even after introduction, new or enhanced products may not satisfy customer preferences and product failures may cause customers to reject our products. As a result, these products may not achieve market acceptance and our brand image could suffer. In addition, the markets for our products and services may not develop or grow as we anticipate. As a result, the failure of our technology, products or services to gain market acceptance, the potential for product defects, product quality issues, or the obsolescence of our products and services could significantly reduce our revenues, increase our operating costs or otherwise materially and adversely affect our business, financial condition, results of operations and cash flows.

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

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

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

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

These and other factors may have a material adverse effect on our non-U.S. operations and therefore on our business and results of operations.

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

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

Due to the international scope of our operations, the system of laws and regulations to which we are subject is complex and includes regulations issued by the U.S. Customs and Border Protection, the U.S. Department of Commerce's Bureau of Industry and Security, the U.S. Treasury Department's Office of Foreign Assets Control and various non U.S. governmental agencies, including applicable export controls, anti-trust, customs, data privacy restrictions, currency exchange control and transfer pricing regulations, laws regulating the foreign ownership of assets, and laws governing certain materials that may be in our products. No assurances can be made that we will continue to be found to be operating in compliance with, or be able to detect violations of, any such laws or regulations. For example, some foreign data privacy regulations are more stringent than those in the U.S. and continue to evolve. In May 2018, the General Data Protection Regulation ("GDPR") superseded prior European Union data protection legislation, and it imposes more stringent European Union data protection requirements, and provides for greater penalties for noncompliance. Under the GDPR, fines of up to 20 million euro or up to 4% of the annual global turnover of the infringer, whichever is greater, could be imposed. Further, existing free trade laws and regulations, such as the North American Free Trade Agreement, or any successor agreement, provide certain beneficial duties and tariffs for qualifying imports and exports, subject to compliance with the applicable classification and other requirements. Changes in laws or policies governing the terms of foreign trade, and in particular increased trade restrictions, tariffs or taxes on imports from countries where we manufacture products or from where we import products or raw materials (either directly or through our suppliers) could have an impact on our competitive position, business and financial results. For example, certain of our businesses have a significant presence in the United Kingdom (the “U.K.”), where the success of the Brexit referendum in 2016 has continued to cause political and economic uncertainty. Although it is unknown what the full terms of the U.K.’s future relationship with the European Union will be, it is possible that the U.K. may be at risk of losing access to free trade agreements for goods and services with the EU and other countries, which may result in increased tariffs on U.K. imports and exports that could have an adverse effect on our profitability.

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

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

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

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

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

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

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

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

Global climate change could negatively affect our business.

Increased public awareness and concern regarding global climate change may result in more regional and/or federal requirements to reduce or mitigate the effects of greenhouse gas emissions. There continues to be a lack of consistent climate legislation, which creates economic and regulatory uncertainty. Such regulatory uncertainty extends to incentives, that if discontinued, could adversely impact the demand for energy efficient buildings and batteries for energy efficient vehicles, and could increase costs of compliance. These factors may impact the demand for our products, obsolescence of our products and our results of operations.

There is a growing consensus that greenhouse gas emissions are linked to global climate changes. Climate changes, such as extreme weather conditions, create financial risk to our business. For example, the demand for our products and services, such as residential air conditioning equipment and automotive replacement batteries, may be affected by unseasonable weather conditions. Climate changes could also disrupt our operations by impacting the availability and cost of materials needed for manufacturing and could increase insurance and other operating costs. These factors may impact our decisions to construct new facilities or maintain existing facilities in areas most prone to physical climate risks. The Company could also face indirect financial risks passed through the supply chain, and process disruptions due to physical climate changes could result in price modifications for our products and the resources needed to produce them.

Potential liability for environmental contamination could result in substantial costs.

We have projects underway at multiple current and former manufacturing facilities to investigate and remediate environmental contamination resulting from past operations by us or by other businesses that previously owned or used the properties. These projects relate to a variety of activities, including solvent, oil, metal, lead, perfluorooctane sulfonate ("PFOS"), perfluorooctanoic acid ("PFOA") and other hazardous substance contamination cleanup; and structure decontamination and demolition, including asbestos abatement. Because of uncertainties associated with environmental regulation and environmental remediation activities at sites where we may be liable, future expenses that we may incur to remediate identified sites could be considerably higher than the current accrued liability on our consolidated statements of financial position, which could have a material adverse effect on our business, results of operations and cash flows.

We are subject to requirements relating to environmental and safety regulations and environmental remediation matters, including those related to the manufacturing and recycling of lead-acid batteries, which could adversely affect our business, results of operation and reputation.

We are subject to numerous federal, state and local environmental laws and regulations governing, among other things, solid and hazardous waste storage, treatment and disposal, and remediation of releases of hazardous materials, including as it pertains to lead, the primary material used in the manufacture of lead-acid batteries. There are significant capital, operating and other costs associated with compliance with these environmental laws and regulations. Environmental laws and regulations may become more stringent in the future, which could increase costs of compliance or require us to manufacture with alternative technologies and materials.

Federal, state and local authorities also regulate a variety of matters, including, but not limited to, health, safety and permitting in addition to the environmental matters discussed above. New legislation and regulations may require the Company to make material changes to its operations, resulting in significant increases to the cost of production.

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

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

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

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

Significant changes in actual investment return on defined benefit plan assets, discount rates, mortality assumptions and other factors could adversely affect our results of operations and the amounts of contributions we must make to our defined benefit plans in future periods. Because we mark-to-market our defined benefit plan assets and liabilities on an annual basis, large non-cash gains or losses could be recorded in the fourth quarter of each fiscal year or when a remeasurement event occurs. Generally accepted accounting principles in the U.S. require that we calculate income or expense for the plans using actuarial valuations. These valuations reflect assumptions about financial markets and interest rates, which may change based on economic conditions. Funding requirements for our defined benefit plans are dependent upon, among other factors, interest rates, underlying asset returns and the impact of legislative or regulatory changes related to defined benefit funding obligations. For a discussion regarding the significant assumptions used to determine net periodic benefit cost, refer to "Critical Accounting Estimates and Policies" included in Item 7, "Management's Discussion and Analysis of Financial Condition and Results of Operations."

We may be unable to realize the expected benefits of our restructuring actions, which could adversely affect our profitability and operations.

To align our resources with our growth strategies, operate more efficiently and control costs, we periodically announce restructuring plans, which may include workforce reductions, global plant closures and consolidations, asset impairments and other cost reduction initiatives. We may undertake additional restructuring actions and workforce reductions in the future. As these plans and actions are complex, unforeseen factors could result in expected savings and benefits to be delayed or not realized to the full extent planned, and our operations and business may be disrupted.

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

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

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

Future changes in U.S. tax law could adversely affect us or our affiliates.

On December 22, 2017, the President of the United States signed into law a bill commonly referred to as the "Tax Cuts and Jobs Act" (the "TCJA"), which made significant changes to certain U.S. tax laws relevant to us and our affiliates. While the provisions of the TCJA are new, their interpretation is subject to uncertainty, and regulatory guidance on many aspects of the TCJA has not yet been issued, the TJCA is expected to have an adverse effect on the U.S. federal income taxation of our and our affiliates' operations, including limiting or eliminating various deductions or credits (including interest expense deductions and deductions relating to employee compensation), imposing taxes on certain cross-border payments or transfers, imposing taxes on certain earnings of non-U.S. entities on a current basis, changing the timing of the recognition of income or its character, limiting asset basis under certain circumstances, and imposing additional corporate taxes under certain circumstances to combat perceived base erosion issues, among other changes.

The TCJA and any related legislation or regulations, as well as any other future changes in U.S. tax laws, could adversely affect the U.S. federal income taxation of our and our affiliates' ongoing operations and may also adversely affect the integration efforts relating to, and potential synergies from, past strategic transactions, as described below. Any such changes and related consequences could have a material adverse impact on our financial results and cash flows. See Note 18, "Income Taxes," of the notes to consolidated financial statements for additional information on the impact the TCJA had on our business, financial performance and results of operations.

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

We are currently, and may in the future, become subject to legal proceedings and commercial or contractual disputes. These are typically claims that arise in the normal course of business including, without limitation, commercial or contractual disputes with our suppliers or customers, intellectual property matters, third party liability, including product liability claims and employment claims. We have also been named as a defendant in a number of actions where third party use of our products has allegedly resulted in contamination to groundwater and drinking water supplies. Plaintiffs in these cases are generally seeking damages for personal injuries, medical monitoring and diminution in property values, and are also seeking punitive damages and injunctive relief to address remediation of the alleged contamination. There is a possibility that such claims may have an adverse impact on our results of operations and cash flows that is greater than we anticipate and/or negatively affect our reputation. See "Item 3. Legal Proceedings" in this Annual Report on Form 10-K a further discussion of these matters.

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

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

Additionally, several of our credit agreements generally include an increase in interest rates if the ratings for our debt are downgraded. Further, an increase in the level of our indebtedness may increase our vulnerability to adverse general economic and industry conditions and may affect our ability to obtain additional financing.

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

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

We may be unable to complete or integrate acquisitions or joint ventures effectively, which may adversely affect our growth, profitability and results of operations.

We expect acquisitions of businesses and assets, as well as joint ventures (or other strategic arrangements), to play a role in our future growth. We cannot be certain that we will be able to identify attractive acquisition or joint venture targets, obtain financing for acquisitions on satisfactory terms, successfully acquire identified targets or form joint ventures, or manage the timing of acquisitions with capital obligations across our businesses. Additionally, we may not be successful in integrating acquired businesses or joint ventures into our existing operations and achieving projected synergies which could result in impairment of assets, including goodwill and acquired intangible assets. Given the significance of the Company's recent acquisitions, the goodwill and intangible assets recorded were significant and impairment of such assets could result in a material adverse impact on our financial condition and results of operation. Competition for acquisition opportunities in the various industries in which we operate may rise, thereby increasing our costs of making acquisitions or causing us to refrain from making further acquisitions. If we were to use equity securities to finance a future acquisition, our then-current shareholders would experience dilution. We are also subject to applicable antitrust laws and must avoid anticompetitive behavior. These and other factors related to acquisitions and joint ventures may negatively and adversely impact our growth, profitability and results of operations.

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

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

We are subject to business continuity risks associated with centralization of certain administrative functions.

We have been regionally centralizing certain administrative functions, primarily in North America, Europe and Asia, to improve efficiency and reduce costs. To the extent that these central locations are disrupted or disabled, key business processes, such as invoicing, payments and general management operations, could be interrupted, which could have an adverse impact on our business.

A failure of our information technology (IT) and data security infrastructure could adversely impact our business and operations.

We rely upon the capacity, reliability and security of our IT and data security infrastructure and our ability to expand and continually update this infrastructure in response to the changing needs of our business. As we implement new systems or integrate existing systems, they may not perform as expected. We also face the challenge of supporting our older systems and implementing necessary upgrades. If we experience a problem with the functioning of an important IT system or a security breach of our IT systems, including during system upgrades and/or new system implementations, the resulting disruptions could have an adverse effect on our business.

We and certain of our third-party vendors receive and store personal information in connection with our human resources operations and other aspects of our business, including our Buildings controls business and our Fire and Security business. Despite our implementation of security measures, our IT systems, like those of other companies, are vulnerable to damages from computer viruses, natural disasters, unauthorized access, cyber attack and other similar disruptions. Any system failure, accident or security breach could result in disruptions to our operations or those of our customers. A material network breach in the security of our IT systems could include the theft of our intellectual property, trade secrets, customer information, human resources information or other confidential matter or the theft of the confidential information of our customers. To the extent that any disruptions or security breach results in a loss or damage to our or our customers' data, or an inappropriate disclosure of confidential, proprietary or customer information, it could cause significant damage to our reputation, affect our relationships with our customers, lead to claims against the Company and ultimately harm our business. In addition, we may be required to incur significant costs to protect against damage caused by these disruptions or security breaches in the future.

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

If our operations, particularly at our monitoring facilities and/or manufacturing facilities, were to be disrupted as a result of significant equipment failures, natural disasters, power outages, fires, explosions, terrorism, sabotage, adverse weather conditions, public health crises, labor disputes or other reasons, we may be unable to effectively respond to alarm signals, fill customer orders and otherwise meet obligations to or demand from our customers, which could adversely affect our financial performance.

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

Our business success depends on attracting and retaining qualified personnel.

Our ability to sustain and grow our business requires us to hire, retain and develop a highly skilled and diverse management team and workforce. Failure to ensure that we have the leadership capacity with the necessary skill set and experience could impede our ability to deliver our growth objectives and execute our strategic plan. Organizational and reporting changes resulting from the Merger, or as a result of any future leadership transition or corporate initiatives could result in increased turnover. Additionally, any unplanned turnover or inability to attract and retain key employees could have a negative effect on our results of operations.

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

We employ approximately 122,000 people worldwide. Approximately 26% of these employees are covered by collective bargaining agreements or works council. Although we believe that our relations with the labor unions and works councils that represent our employees are generally good and we have experienced no material strikes or work stoppages recently, no assurances can be made that we will not experience in the future these and other types of conflicts with labor unions, works council, other groups representing employees or our employees generally, or that any future negotiations with our labor unions will not result in significant increases in our cost of labor. Additionally, a work stoppage at one of our suppliers could materially and adversely affect our operations if an alternative source of supply were not readily available. Stoppages by employees of our customers could also result in reduced demand for our products.

We are exposed to greater risks of liability for employee acts or omissions, or system failure, in our fire and security businesses than may be inherent in other businesses.

If a customer or third party believes that he or she has suffered harm to person or property due to an actual or alleged act or omission of one of our employees or a security or fire system failure, he or she may pursue legal action against us, and the cost of defending the legal action and of any judgment could be substantial. In particular, because many of our products and services are intended to protect lives and real and personal property, we may have greater exposure to litigation risks than businesses that provide other products and services. We could face liability for failure to respond adequately to alarm activations or failure of our fire protection to operate as expected. The nature of the services we provide exposes us to the risks that we may be held liable for employee acts or omissions or system failures. In an attempt to reduce this risk, our installation, service and monitoring agreements and other contracts contain provisions limiting our liability in such circumstances, and we typically maintain product liability insurance to mitigate the risk that our products and services fail to operate as expected. However, in the event of litigation, it is possible that contract limitations may be deemed not applicable or unenforceable, that our insurance coverage is not adequate, or that insurance carriers deny coverage of our claims. As a result, such employee acts or omissions or system failures could have a material adverse effect on our business, financial condition, results of operations and cash flows.

We do not own the right to use the ADT® brand name in the U.S. and Canada.

We own the ADT® brand name in jurisdictions outside of the U.S. and Canada, and The ADT Corporation ("ADT") owns the brand name in the U.S. and Canada. Although Tyco has entered agreements with ADT designed to protect the value of the ADT® brand, we cannot assure you that actions taken by ADT will not negatively impact the value of the brand outside of the U.S. and Canada. These factors expose us to the risk that the ADT® brand name could suffer reputational damage or devaluation for reasons outside of our control, including ADT's business conduct in the U.S. and Canada. Any of these factors may adversely affect our business, financial condition, results of operations and cash flows.

Police departments could refuse to respond to calls from monitored security service companies.

Police departments in a limited number of jurisdictions do not respond to calls from monitored security service companies, either as a matter of policy or by local ordinance. We have offered affected customers the option of receiving responses from private guard companies, in most cases through contracts with us, which increases the overall cost to customers. If more police departments, whether inside or outside the U.S., were to refuse to respond or be prohibited from responding to calls from monitored security service companies, our ability to attract and retain customers could be negatively impacted and our results of operations and cash flow could be adversely affected.

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

Any of the following could materially and adversely impact the results of operations of our Power Solutions business: loss of, or changes in, automobile battery supply contracts with our large original equipment and aftermarket customers; the increasing quality and useful life of batteries or use of alternative battery technologies, both of which may adversely impact the lead-acid battery market, including replacement cycle; delays or cancellations of new vehicle programs; market and financial consequences of any recalls that may be required on our products; delays or difficulties in new product development, including lithium-ion technology; impact of potential increases in lithium-ion battery volumes on established lead-acid battery volumes as lithium-ion battery technology grows and costs become more competitive; financial instability or market declines of our customers or suppliers; slower than projected market development in emerging markets; interruption of supply of certain single-source components; changing nature of our joint ventures and relationships with our strategic business partners; unseasonable weather conditions in various parts of the world; our ability to secure sufficient tolling capacity to recycle batteries; price and availability of battery cores used in recycling; and the pace of the development of the market for hybrid and electric vehicles.

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

Any of the following could materially and adversely impact the results of operations of our Buildings business: loss of, changes in, or failure to perform under guaranteed performance contracts with our major customers; cancellation of, or significant delays in, projects in our backlog; delays or difficulties in new product development; the potential introduction of similar or superior technologies; financial instability or market declines of our major component suppliers; the unavailability of raw materials (primarily steel, copper and electronic components) necessary for production of our products; price increases of limited-source components, products and services that we are unable to pass on to the market; unseasonable weather conditions in various parts of the world; changes in energy costs or governmental regulations that would decrease the incentive for customers to update or improve their building control systems; revisions to energy efficiency or refrigerant legislation; and natural or man-made disasters or losses that impact our ability to deliver products and services to our customers.

Risks Relating to Strategic Transactions

We may fail to realize the anticipated benefits of the business combination between Johnson Controls, Inc. and Tyco International plc.

The success of the Merger will depend on, among other things, our ability to combine the legacy businesses of Johnson Controls and Tyco in a manner that realizes anticipated synergies and facilitates growth opportunities, and achieves the projected stand-alone cost savings and revenue growth trends identified by us. We expect to benefit from operational and general and administrative cost synergies resulting from the consolidation of capabilities and branch optimization, as well as greater tax efficiencies from global management and global cash movement. We may also enjoy revenue synergies, including product and service cross-selling, a more diversified and expanded product offering and balance across geographic regions. However, we must successfully combine the legacy businesses of Johnson Controls and Tyco in a manner that permits these cost savings and synergies to be realized. In addition, we must achieve the anticipated savings and synergies without adversely affecting current revenues and investments in future growth. If we are not able to successfully achieve these objectives, we may not realize fully, or at all, the anticipated benefits of the Merger, or it may take longer to realize the benefits than expected.

Other factors may prevent us from realizing the anticipated benefits of the Merger or impact our future performance. These include, among other items, the possibility that the contingent liabilities of either party (including contingent tax liabilities) are larger than expected, the existence of unknown liabilities, adverse consequences and unforeseen increased expenses associated with the Merger and possible adverse tax consequences pursuant to changes in applicable tax laws (including most recently the TCJA), regulations or other administrative guidance. In addition, we may be subject to additional restrictions resulting from Tyco's incurrence of debt in connection with the Merger and as a result of the Company's Irish domicile.

We may encounter significant difficulties in combining the legacy Johnson Controls and Tyco businesses.

The combination of two independent businesses is a complex, costly and time-consuming process. As a result, we will be required to devote significant management attention and resources to combining the business practices and operations of the legacy Johnson Controls and Tyco businesses. This process may disrupt the businesses. The failure to meet the challenges involved in combining the two businesses and to realize the anticipated benefits of the transactions could cause an interruption of, or a loss of momentum in, the activities of the combined company and could adversely affect our results of operations. The overall combination of legacy Johnson Controls and Tyco businesses may also result in material unanticipated problems, expenses, liabilities, competitive responses, loss of customer and other business relationships and diversion of management attention. The difficulties of combining the operations of the companies include, among others:

- the diversion of management attention to integration matters;
- difficulties in integrating operations and systems;
- challenges in conforming standards, controls, procedures and accounting and other policies, business cultures and compensation structures between the two companies;
- difficulties in assimilating employees and in attracting and retaining key personnel;
- challenges in keeping existing customers and obtaining new customers;
- difficulties in achieving anticipated cost savings, synergies, business opportunities and growth prospects from the combination;
- difficulties in managing the expanded operations of a significantly larger and more complex company;
- contingent liabilities (including contingent tax liabilities) that are larger than expected; and
- potential unknown liabilities, adverse consequences and unforeseen increased expenses associated with the Merger, including possible adverse tax consequences to the combined company pursuant to changes in applicable tax laws or regulations.

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

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

We continually evaluate the performance and strategic fit of all of our businesses and may sell businesses or product lines. For example, on October 31, 2016, we completed the spin-off of our Automotive Experience business and sold our Scott Safety business in October 2017. In addition, on November 13, 2018, we announced that we had entered into a definitive agreement to sell our Power Solutions business to BCP Acquisitions LLC. Divestitures involve risks, including difficulties in the separation of operations, services, products and personnel, the diversion of management's attention from other business concerns, the disruption of our business, the potential loss of key employees and the retention of uncertain environmental or other contingent liabilities related to the divested business. Some divestitures, like the Power Solutions divestiture, may be dilutive to earnings. In addition, divestitures may result in significant asset impairment charges, including those related to goodwill and other intangible assets, which could have a material adverse effect on our financial condition and results of operations. We cannot assure you that we will be successful in managing these or any other significant risks that we encounter in divesting a business or product line, and any divestiture we undertake could materially and adversely affect our business, financial condition, results of operations and cash flows, and may also result in a diversion of management attention, operational difficulties and losses. With respect to the Power Solutions divestiture, there can be no assurance whether and when the required regulatory approvals for the divestiture will be obtained, whether and when the closing conditions will be satisfied or waived, and whether the strategic benefits and expected financial impact of the divestiture will be achieved.

The Internal Revenue Service ("IRS") may not agree that we should be treated as a non-U.S. corporation for U.S. federal tax purposes and may not agree that the our U.S. affiliates should not be subject to certain adverse U.S. federal income tax rules.

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

Under Section 7874, if (1) former Johnson Controls, Inc. shareholders owned (within the meaning of Section 7874) 80% or more (by vote or value) of our ordinary shares after the Merger by reason of holding Johnson Controls, Inc. common stock (the "80% ownership test," and such ownership percentage the "Section 7874 ownership percentage"), and (2) our "expanded affiliated group" did not have "substantial business activities" in Ireland ("the substantial business activities test"), we will be treated as a U.S. corporation for U.S. federal tax purposes. If the Section 7874 ownership percentage of the former Johnson Controls, Inc. shareholders after the Merger was less than 80% but at least 60% (the "60% ownership test"), and the substantial business activities test was not met, we and our U.S. affiliates (including the U.S. affiliates historically owned by Tyco) may, in some circumstances, be subject to certain adverse U.S. federal income tax rules (which, among other things, could limit their ability to utilize certain U.S. tax attributes to offset U.S. taxable income or gain resulting from certain transactions).

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

However, the rules under Section 7874 are complex and there is limited guidance regarding their application. In particular, ownership for purposes of Section 7874 is subject to various adjustments under the Code and the Treasury regulations promulgated thereunder, and there is limited guidance regarding Section 7874, including with respect to the application of the ownership tests described therein. As a result, the determination of the Section 7874 ownership percentage is complex and is subject to factual and legal uncertainties. Thus, there can be no assurance that the IRS will agree with the position that we should not be treated as a U.S. corporation for U.S. federal tax purposes or that Section 7874 does not otherwise apply as a result of the Merger.

In addition, on January 13, 2017 and July 11, 2018, the U.S. Treasury and the IRS finalized certain Treasury regulations issued under Section 7874 and revised certain related temporary regulations (the "Section 7874 Regulations"), which, among other things, require certain adjustments that generally increase, for purposes of the Section 7874 ownership tests, the percentage of the stock of a foreign acquiring corporation deemed owned (within the meaning of Section 7874) by the former shareholders of an acquired U.S. corporation by reason of holding stock in such U.S. corporation. For example, these regulations disregard, for purposes of determining this ownership percentage, (1) any "non-ordinary course distributions" (within the meaning of the regulations) made by the acquired U.S. corporation (such as Johnson Controls, Inc.) during the 36 months preceding the acquisition, including certain dividends and share repurchases, (2) potentially any cash consideration received by the shareholders of such U.S. corporation in the acquisition to the extent such cash is, directly or indirectly, provided by the U.S. corporation, as well as (3) certain stock of the foreign acquiring corporation that was issued as consideration in a prior acquisition of another U.S. corporation (or U.S. partnership) during the 36 months preceding the signing date of a binding contract for the acquisition being tested. Taking into account the effect of these regulations, we believe that the Section 7874 ownership percentage of former Johnson Controls, Inc. shareholders in us was less than 60%. However, these regulations are complex and there is limited guidance regarding their application. Accordingly, there can be no assurance that the IRS will not successfully assert that either the 80% ownership test or the 60% ownership test was met after the Merger.

If the 80% ownership test was met after the Merger and we were accordingly treated as a U.S. corporation for U.S. federal tax purposes under Section 7874, we would be subject to substantial additional U.S. tax liability. Additionally, in such case, our non-U.S. shareholders would be subject to U.S. withholding tax on the gross amount of any dividends we pay to such shareholders (subject to an exemption or reduced rate available under an applicable tax treaty). Regardless of any application of Section 7874, we are treated as an Irish tax resident for Irish tax purposes. Consequently, if we were to be treated as a U.S. corporation for U.S. federal tax purposes under Section 7874, we could be liable for both U.S. and Irish taxes, which could have a material adverse effect on our financial condition and results of operations.

If the 60% ownership test were met, several adverse U.S. federal income tax rules could apply to our U.S. affiliates. In particular, in such case, Section 7874 could limit the ability of such U.S. affiliates to utilize certain U.S. tax attributes (including net operating losses and certain tax credits) to offset any taxable income or gain resulting from certain transactions, including any transfers or licenses of property to a foreign related person during the 10-year period following the Merger. The Section 7874 Regulations generally expand the scope of these rules. If the 60% ownership test were met after the Merger, such current and future limitations would apply to our U.S. affiliates (including the U.S. affiliates historically owned by Tyco), and their application could limit their ability to utilize such U.S. tax attributes against any income or gain recognized in connection with the Adient spin-off. In such case, the application of such rules could result in significant additional U.S. tax liability. In addition, the Section 7874 Regulations (and certain related temporary regulations issued under other provisions of the Code) include rules that would apply if the 60% ownership test were met, which, in such situation, may limit our ability to restructure or access cash earned by certain of our non-U.S. subsidiaries, in each case, without incurring substantial U.S. tax liabilities.

Future potential changes to the tax laws could result in our being treated as a U.S. corporation for U.S. federal tax purposes or in us and our U.S. affiliates (including the U.S. affiliates historically owned by Tyco) being subject to certain adverse U.S. federal income tax rules.

As discussed above, under current law, we believe that we should be treated as a non-U.S. corporation for U.S. federal tax purposes and that Section 7874 does not otherwise apply as a result of the Merger. However, changes to Section 7874, or the U.S. Treasury regulations promulgated thereunder, could affect our status as a non-U.S. corporation for U.S. federal tax purposes or could result in the application of certain adverse U.S. federal income tax rules to us and our U.S. affiliates (including the U.S. affiliates historically owned by Tyco). Any such changes could have prospective or retroactive application, and may apply even though the Merger has been consummated. If we were to be treated as a U.S. corporation for federal tax purposes or if we or our U.S. affiliates (including the U.S. affiliates historically owned by Tyco) were to become subject to such adverse U.S. federal income tax rules, we and our U.S. affiliates could be subject to substantially greater U.S. tax liability than currently contemplated.

Certain legislative and other proposals have aimed to expand the scope of U.S. corporate tax residence, including in such a way as would cause us to be treated as a U.S. corporation if our place of management and control or the place of management and control of our non-U.S. affiliates were determined to be located primarily in the United States. In addition, certain legislative and other proposals have aimed to expand the scope of Section 7874, or otherwise address certain perceived issues arising in connection with so-called inversion transactions. For example, multiple proposals introduced by certain Democratic members of both houses of Congress, which, if enacted in their present form, would be effective retroactively to certain transactions (including the Merger), would, among other things, treat a foreign acquiring corporation as a U.S. corporation for U.S. federal tax purposes under Section 7874 if the former shareholders of a U.S. corporation acquired by such foreign acquiring corporation own more than 50% of the shares of the foreign acquiring corporation after the acquisition. These proposals, if enacted in their present form and made retroactive to a date before the date of the closing of the Merger, would cause us to be treated as a U.S. corporation for U.S. federal tax purposes. In such case, we would be subject to substantially greater U.S. tax liability than currently contemplated. It is presently uncertain whether any such proposals or other legislative action relating to the scope of U.S. tax residence, Section 7874 or so-called inversion transactions and inverted groups will be enacted into law.

Other legislative and/or other proposals relating to U.S. taxation could also have a material impact on our future financial results. The recently enacted TCJA introduced significant changes to certain U.S. tax laws relevant to us and our affiliates, including limitations on the deductibility of certain interest expense and employee compensation, limitations on various other deductions and credits, the imposition of taxes in respect of certain cross-border payments or transfers, the imposition of taxes on certain earnings of non-U.S. entities on a current basis, and changes in the timing of the recognition of income or its character. These changes, any future regulatory guidance implementing the TCJA, as well as any other legislative or other proposals or changes relating to U.S. taxation (which may or may not be adopted and may apply, on a prospective or retroactive basis), could have a significant adverse effect on us and our affiliates.

We may be unable to achieve some or all of the benefits that we expect to achieve from the spin-off of Adient plc.

On October 31, 2016, we completed the separation of our Automotive Experience business through the spin-off of Adient plc to shareholders. Following the spin-off, we are a smaller and less diversified company with a narrower business focus and, as a result, we may be more vulnerable to changing market conditions.

Although we believe that the spin-off of Adient plc will provide financial, operational, managerial and other benefits to us and shareholders, the spin-off may not provide such results on the scope or scale we anticipate, and we may not realize any or all of the intended benefits. In addition, we have and will continue to incur one-time costs and ongoing costs in connection with, or as a result of, the spin-off, including costs of operating as independent, publicly-traded companies that the two businesses are no longer able to share. Those costs may exceed our estimates or could negate some of the benefits we expect to realize. If we do not realize the intended benefits of the spin-off or if our costs exceed our estimates, we could suffer a material adverse effect on our business, financial condition, results of operations and cash flows.

Adient may fail to perform under various transaction agreements that we have executed as part of the Adient spin-off.

In connection with the spin-off of Adient, we and Adient have entered into a separation and distribution agreement and various other agreements, including a transition services agreement, a tax matters agreement, an employee matters agreement and a transitional trademark license agreement. Certain of these agreements provide for the performance of services by each company for the benefit of the other for a period of time after the spin-off. We will rely on Adient to satisfy its performance and payment obligations under these agreements. If Adient is unable to satisfy its obligations under these agreements, including its indemnification obligations, we could incur operational difficulties or losses.

Risks Relating to Our Jurisdiction of Incorporation

Legislative action in the U.S. could materially and adversely affect us.

Legislative action may be taken by the U.S. Congress which, if ultimately enacted, could limit the availability of tax benefits or deductions that we currently claim, override tax treaties upon which we rely, affect our status as a non-U.S. corporation for U.S. federal income tax purposes, impose additional taxes on payments made by our U.S. subsidiaries to non-U.S. affiliates, or otherwise affect the taxes that the U.S. imposes on our worldwide operations. Such changes could have retroactive effect and could have a material adverse effect on our effective tax rate and/or require us to take further action, at potentially significant expense, to seek to preserve our effective tax rate. In addition, if proposals were enacted that had the effect of disregarding or limiting our ability, as an Irish company, to take advantage of tax treaties with the U.S., we could incur additional tax expense and/or otherwise incur business detriment.

Legislation relating to governmental contracts could materially and adversely affect us.

Various U.S. federal and state legislative proposals that would deny governmental contracts to U.S. companies that have moved their corporate location abroad may affect us. We are unable to predict the likelihood that, or final form in which, any such proposed legislation might become law, the nature of regulations that may be promulgated under any future legislative enactments, or the effect such enactments and increased regulatory scrutiny may have on our business.

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

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

A judgment obtained against the combined company will be enforced by the courts of Ireland if the following general requirements are met:

- U.S. courts must have had jurisdiction in relation to the particular defendant according to Irish conflict of law rules (the submission to jurisdiction by the defendant would satisfy this rule); and
- the judgment must be final and conclusive and the decree must be final and unalterable in the court which pronounces it.

A judgment can be final and conclusive even if it is subject to appeal or even if an appeal is pending. But where the effect of lodging an appeal under the applicable law is to stay execution of the judgment, it is possible that in the meantime the judgment may not be actionable in Ireland. It remains to be determined whether final judgment given in default of appearance is final and conclusive. Irish courts may also refuse to enforce a judgment of the U.S. courts which meets the above requirements for one of the following reasons:

- the judgment is not for a definite sum of money;
- the judgment was obtained by fraud;

- the enforcement of the judgment in Ireland would be contrary to natural or constitutional justice;
- the judgment is contrary to Irish public policy or involves certain U.S. laws which will not be enforced in Ireland; or
- jurisdiction cannot be obtained by the Irish courts over the judgment debtors in the enforcement proceedings by personal service Ireland or outside Ireland under Order 11 of the Irish Superior Courts Rules.

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

Our effective tax rate may increase.

There is uncertainty regarding the tax policies of the jurisdictions where we operate, which if enacted could result in an increase in our effective tax rate. Additionally, the tax laws of Ireland and other jurisdictions could change in the future, and such changes could cause a material increase in our effective tax rate.

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

On February 17, 2016, the U.S. Treasury released a revised U.S. model income tax convention (the "new model"), which is the baseline text used by the U.S. Treasury to negotiate tax treaties. The new model treaty provisions were preceded by draft versions released by the U.S. Treasury on May 20, 2015 (the "May 2015 draft") for public comment. The revisions made to the model address certain aspects of the model by modifying existing provisions and introducing entirely new provisions. Specifically, the new provisions target (i) permanent establishments subject to little or no foreign tax, (ii) special tax regimes, (iii) expatriated entities subject to Section 7874, (iv) the anti-treaty shopping measures of the limitation on benefits article and (v) subsequent changes in treaty partners' tax laws.

With respect to new model provisions pertaining to expatriated entities, because we do not believe that the Merger resulted in the creation of an expatriated entity as defined in Section 7874, payments of interest, dividends, royalties and certain other items of income by or to us and/or our U.S. affiliates to or from non-U.S. persons would not be expected to become subject to full withholding tax, even if applicable treaties were subsequently amended to adopt the new model provisions. In response to comments the U.S. Treasury received regarding the May 2015 draft, the new model treaty provisions pertaining to expatriated entities fix the definition of "expatriated entity" to the meaning ascribed to such term under Section 7874(a)(2)(A) as of the date the relevant bilateral treaty is signed. However, as discussed above, the rules under Section 7874 are relatively new, complex and are the subject of current and future legislative and regulatory changes. Accordingly, there can be no assurance that the IRS will agree with the position that the Merger did not result in the creation of an expatriated entity (within the meaning of Section 7874) under the law as in effect at the time the applicable treaty were to be amended or that such a challenge would not be sustained by a court, or that such position would not be affected by future or regulatory action which may apply retroactively to the Merger.

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

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

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

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

In certain circumstances, as an Irish tax resident company, we will be required to deduct Irish dividend withholding tax (currently at the rate of 20%) from dividends paid to our shareholders. Shareholders that are resident in the U.S., European Union countries (other than Ireland) or other countries with which Ireland has signed a tax treaty (whether the treaty has been ratified or not) generally should not be subject to Irish withholding tax so long as the shareholder has provided its broker, for onward transmission to our qualifying intermediary or other designated agent (in the case of shares held beneficially), or us or our transfer agent (in the case of shares held directly), with all the necessary documentation by the appropriate due date prior to payment of the dividend. However, some shareholders may be subject to withholding tax, which could adversely affect the price of our ordinary shares.

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

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

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

ITEM 1B UNRESOLVED STAFF COMMENTS

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

ITEM 2 PROPERTIES

The Company conducts its operations in approximately 70 countries throughout the world, with its world headquarters located in Cork, Ireland and its North American operational headquarters located in Milwaukee, Wisconsin USA. The Company's wholly- and majority-owned facilities primarily consist of manufacturing, sales and service offices, research and development facilities, monitoring centers, and assembly and/or warehouse centers. At September 30, 2018, these properties totaled approximately 80 million square feet of floor space of which 52 million square feet are owned and 28 million square feet are leased. The Company considers its facilities to be suitable for their current uses and adequate for current needs. The majority of the facilities are operating at normal levels based on capacity. The Company does not anticipate difficulty in renewing existing leases as they expire or in finding alternative facilities.

Building Solutions North America operates through a network of manufacturing facilities, sales and service offices and assembly and/or warehouse centers located in the U.S. and Canada. The business occupies approximately 6 million square feet, of which 5 million square feet are leased and 1 million square feet are owned.

Building Solutions EMEA/LA operates through a network of sales and service offices and assembly and/or warehouse centers located in Europe, the Middle East, Africa and Latin America. The business occupies approximately 4 million square feet, of which 3 million square feet are leased and 1 million square feet are owned.

Building Solutions Asia Pacific operates through a network of sales and service offices and assembly and/or warehouse centers located in the Asia Pacific region. The business occupies approximately 2 million square feet, of which the majority is leased.

Global Products operates through a network of manufacturing facilities, sales offices and assembly and/or warehouse centers located in North America, Latin America, Europe, the Middle East, Africa and Asia Pacific. The business occupies approximately 31 million square feet, of which 15 million square feet are leased and 16 million square feet are owned.

Power Solutions operates through a network of manufacturing facilities, and assembly and/or warehouse centers located in North America, South America, Europe and the Asia Pacific region. The business occupies approximately 35 million square feet, of which 33 million square feet are owned and 2 million square feet are leased.

Corporate offices operate in North America, Europe and the Asia-Pacific region, which occupy approximately 2 million square feet, of which 1 million square feet are leased and 1 million square feet are owned.

ITEM 3 LEGAL PROCEEDINGS

Laufer v. Johnson Controls, Inc., et al.

On May 20, 2016, a putative class action lawsuit, Laufer v. Johnson Controls, Inc., et al., Docket No. 2016CV003859, was filed in the Circuit Court of Wisconsin, Milwaukee County, naming Johnson Controls, Inc., the individual members of its board of directors, the Company and the Company's merger subsidiary as defendants. The complaint alleged that Johnson Controls Inc.'s directors breached their fiduciary duties in connection with the merger between Johnson Controls Inc. and the Company's merger subsidiary by, among other things, failing to take steps to maximize shareholder value, seeking to benefit themselves improperly and failing to disclose material information in the joint proxy statement/prospectus relating to the merger. The complaint further alleged that the Company aided and abetted Johnson Controls Inc.'s directors in the breach of their fiduciary duties. The complaint sought, among other things, to enjoin the merger. On August 8, 2016, the plaintiffs agreed to settle the action and release all claims that were or could have been brought by plaintiffs or any member of the putative class of Johnson Controls Inc.'s shareholders. The settlement was approved by the court on August 13, 2018.

Gumm v. Molinaroli, et al.

On August 16, 2016, a putative class action lawsuit, Gumm v. Molinaroli, et al., Case No. 16-cv-1093, was filed in the United States District Court for the Eastern District of Wisconsin, naming Johnson Controls, Inc., the individual members of its board of directors at the time of the merger with the Company's merger subsidiary and certain of its officers, the Company and the Company's merger subsidiary as defendants. The complaint asserted various causes of action under the federal securities laws, state law and the Taxpayer Bill of Rights, including that the individual defendants allegedly breached their fiduciary duties and unjustly enriched themselves by structuring the merger among the Company, Tyco and the merger subsidiary in a manner that would result in a United States federal income tax realization event for the putative class of certain Johnson Controls, Inc. shareholders and allegedly result in certain benefits to the defendants, as well as related claims regarding alleged misstatements in the proxy statement/prospectus distributed to the Johnson Controls, Inc. shareholders, conversion and breach of contract. The complaint also asserted that Johnson Controls, Inc., the Company and the Company's merger subsidiary aided and abetted the individual defendants in their breach of fiduciary duties and unjust enrichment. The complaint seeks, among other things, disgorgement of profits and damages. On September 30, 2016, approximately one month after the closing of the merger, plaintiffs filed a preliminary injunction motion seeking, among other items, to compel Johnson Controls, Inc. to make certain intercompany payments that plaintiffs contend will impact the United States federal income tax consequences of the merger to the putative class of certain Johnson Controls, Inc. shareholders and to enjoin Johnson Controls, Inc. from reporting to the Internal Revenue Service the capital gains taxes payable by this putative class as a result of the closing of the merger. The court held a hearing on the preliminary injunction motion on January 4, 2017, and on January 25, 2017, the judge denied the plaintiffs' motion. Plaintiffs filed an amended complaint on February 15, 2017, and the Company filed a motion to dismiss on April 3, 2017. Although the Company believes it has substantial defenses to plaintiffs' claims, it is not able to predict the outcome of this action.

Refer to Note 22, "Commitments and Contingencies," of the notes to consolidated financial statements for discussion of environmental, asbestos, insurable liabilities and other litigation matters, which is incorporated by reference herein and is considered an integral part of Part I, Item 3, "Legal Proceedings."

ITEM 4 MINE SAFETY DISCLOSURES

Not applicable.

EXECUTIVE OFFICERS OF THE REGISTRANT

Pursuant to General Instruction G(3) of Form 10-K, the following list of executive officers of the Company as of November 20, 2018 is included as an unnumbered Item in Part I of this report in lieu of being included in the Company's Proxy Statement relating to the annual general meeting of shareholders to be held on March 6, 2019.

John Donofrio, 56, has served as Executive Vice President and General Counsel of the Company since November 15, 2017. He previously served as Vice President, General Counsel and Secretary of Mars, Incorporated, a global food manufacturer from October 2013 to November 2017. Before joining Mars in October 2013, Mr. Donofrio was Executive Vice President, General Counsel and Secretary for The Shaw Group Inc., a global engineering and construction company, from October 2009 until February 2013. Prior to joining Shaw, Mr. Donofrio was Senior Vice President, General Counsel and Chief Compliance Officer at Visteon Corporation, a global automotive supplier, a position he held from 2005 until October 2009. Mr. Donofrio has been a Director of FARO Technologies, Inc., a designer, developer, manufacturer and marketer of software driven, 3D measurement, imaging and realization systems, since 2008.

William C. Jackson, 58, was elected Vice President and President, Global Products, Building Technologies and Solutions following the completion of the Merger in September 2016. Prior to the Merger he was elected a Vice President and named President, Building Efficiency of Johnson Controls, Inc. in September 2014. He previously served Johnson Controls, Inc. as Executive Vice President, Corporate Development from 2013 to 2014, as President - Automotive Electronics & Interiors from 2012 to 2014, and as Executive Vice President, Operations and Innovation, from 2011 to 2013. Prior to joining Johnson Controls, Inc., Mr. Jackson was Vice President and President of Automotive at Sears Holdings Corporation, (an integrated retailer) from 2009 to 2010. Mr. Jackson is a Director of Metaldyne Performance Group, Inc. (metal-forming technology manufacturing company), where he serves on the Compensation Committee.

Visal Leng, 48, was elected Vice President and President, Building Solutions, Asia Pacific in September 2018. He previously served as President Asia Pacific of Baker Hughes, the world's first and only full stream provider of integrated oilfield products, services and digital solutions, from July 2017 to September 2018. Prior to the merger of Baker Hughes with General Electric in 2017, he held a number of roles with increasing responsibility in General Electric from his hire in November 1996, including President of its Asia Pacific oil and gas operations from January 2014 to July 2017; and Asia Pacific Regional General Manager from October 2011 to December 2013.

Lynn Minella, 60, has served as Executive Vice President and Chief Human Resources Officer since June 2017. Prior to joining Johnson Controls, she served as Group Human Resources Director at BAE Systems Plc from June 2012 to June 2017. Prior to BAE Systems, she was with Air Products and Chemicals, Inc. from 2004 until 2012 where she was the Senior Vice President of Human Resources and Communications. Earlier in her career she also held a variety of human resources roles of increasing responsibility at International Business Machines Corporation.

George R. Oliver, 59, has served as Chief Executive Officer and Chairman of the Board since September 2017. Prior thereto he served as President and Chief Operating Officer following the completion of the Merger in September 2016. Prior to the Merger, he was Chief Executive Officer of Tyco from October 2012. He joined Tyco in July 2006, serving as president of Tyco Safety Products, and assumed additional responsibility as president of Tyco Electrical & Metal Products from 2007 through 2010. He was appointed president of Tyco Fire Protection in 2011. Mr. Oliver also serves on the board of Raytheon Company, a company specializing in defense, security and civil markets throughout the world.

Rodney M. Rushing, 52, was elected Vice President and President, Building Solutions, North America in November 2016. From 2015 to November 2016 he served as Global Vice President and General Manager, Global Products - Direct Expansion, overseeing the integration of Johnson Controls, Inc.'s joint venture with Hitachi Air Conditioning. Prior thereto, from 2013 to 2015 he was Vice President and General Manager, Products and Distribution North America and from 2009 to 2013 he was Vice President and General Manager of Unitary Products. Mr. Rushing first joined Johnson Controls, Inc. in 1990, and has held a number of roles of increasing responsibility in its field and product organization.

Brian J. Stief, 62, was elected Executive Vice President and Chief Financial Officer following the completion of the Merger in September 2016. He also serves as the Company's Principal Financial Officer. Prior to the Merger, he was elected Executive Vice President and Chief Financial Officer of Johnson Controls, Inc. in September 2014. He previously served Johnson Controls, Inc. as Vice President and Corporate Controller from 2010 to 2014. Prior to joining Johnson Controls, Inc. in 2010, Mr. Stief was a partner with PricewaterhouseCoopers LLP (an audit and assurance, tax and consulting services provider), which he joined in 1979 and in which he became partner in 1989.

Robert VanHimbergen, 42, has served as Vice President and Corporate Controller since December 2017. Mr. VanHimbergen joined Johnson Controls in 2007 as the Corporate Director of Global Accounting and has held various Corporate and Power Solutions positions of increasing responsibility. His most recent position was serving as the Chief Financial Officer of Yanfeng Automotive Interiors, an Adient joint venture, formed in 2015. Mr. VanHimbergen began his career at PricewaterhouseCoopers in 1998.

Joseph A. Walicki, 53, was elected Vice President and President, Power Solutions following the completion of the Merger in September 2016. Prior to the Merger, he was elected a Vice President and named President, Power Solutions of Johnson Controls, Inc. in January 2015. He previously served Johnson Controls, Inc. as the Chief Operating Officer, Power Solutions in 2014, as Vice President and General Manager - North America, Systems, Service & Solutions from 2013 to 2014, and as Vice President and General Manager Systems & Channels North America from 2010 to 2013. Mr. Walicki joined Johnson Controls, Inc. in 1988.

Jeff M. Williams, 57, was elected Vice President and President, Building Solutions, Europe, Middle East, Africa and Latin America in March 2017. He previously served as Vice President - Enterprise Operations - Engineering and Supply Chain from January 2015 through the Merger to March 2017. With respect to roles at Johnson Controls, Inc., he served as Vice President, Program Management Office from 2015 to 2016, as Group Vice President and General Manager Global Seating & Supply Chain from 2013 to 2014, and as Group Vice President and General Manager Customer Group Americas from 2010 to 2012. Mr. Williams joined Johnson Controls, Inc. in 1984.

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

PART II

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

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

Title of Class	Number of Record Holders as of September 30, 2018
Ordinary Shares, $0.01 par value	37,836

	Dividends	
	2018	2017
First Quarter	$ 0.26	$ 0.25
Second Quarter	0.26	0.25
Third Quarter	0.26	0.25
Fourth Quarter	0.26	0.25
Year	$ 1.04	$ 1.00

Following the Tyco Merger, the Company adopted, subject to the ongoing existence of sufficient distributable reserves, the existing Tyco International plc $1 billion share repurchase program in September 2016. In December 2017, the Company's Board of Directors approved a $1 billion increase to its share repurchase authorization. The share repurchase program does not have an expiration date and may be amended or terminated by the Board of Directors at any time without prior notice. During fiscal year 2018, the Company repurchased approximately $300 million of its shares. As of September 30, 2018, approximately $1.0 billion remains available under the share repurchase program. In November 2018, the Company's Board of Directors approved a $1 billion increase to its share repurchase authorization.

The following table presents information regarding the repurchase of the Company's ordinary shares by the Company as part of the publicly announced program during the three months ended September 30, 2018.

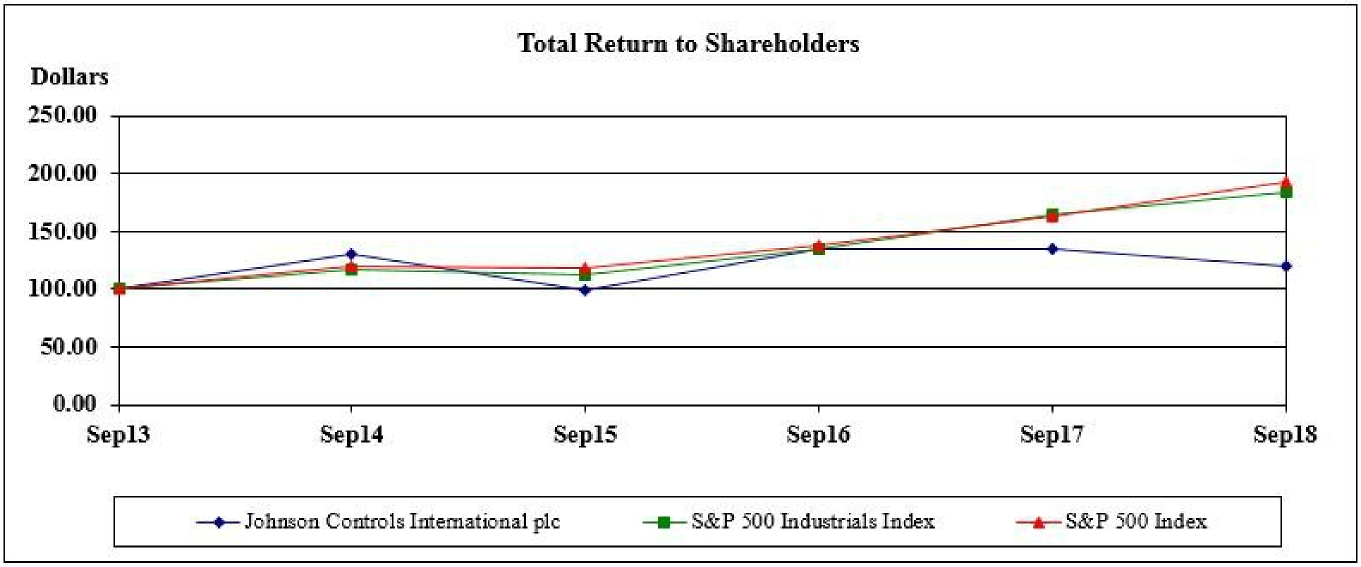
Period	Total Number of Shares Purchased	Average Price Paid per Share	Total Number of Shares Purchased as Part of the Publicly Announced Program	Approximate Dollar Value of Shares that May Yet be Purchased under the Programs
7/1/18 - 7/31/18				
Purchases by Company	431,907	$ 34.99	431,907	$ 1,078,596,769
8/1/18 - 8/31/18				
Purchases by Company	793,981	37.90	793,981	1,048,504,307
9/1/18 - 9/30/18				
Purchases by Company	—	—	—	1,048,504,307

During the three months ended September 30, 2018, acquisitions of shares by the Company from certain employees in order to satisfy employee tax withholding requirements in connection with the vesting of restricted shares were not material.

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

The line graph below compares the cumulative total shareholder return on our ordinary shares with the cumulative total return of companies on the Standard & Poor's ("S&P's") 500 Stock Index and the companies on the S&P 500 Industrials Index. This graph assumes the investment of $100 on September 30, 2013 and the reinvestment of all dividends since that date.

COMPANY/INDEX	Sep13	Sep14	Sep15	Sep16	Sep17	Sep18
Johnson Controls International plc	100.00	129.54	99.12	135.36	134.12	119.89
S&P 500 Industrials Index	100.00	116.76	112.48	134.64	164.73	183.11
S&P 500 Index	100.00	119.73	119.00	137.36	162.92	192.10



The Company's transfer agent's contact information is as follows:

EQ Shareowner Services
P.O. Box 64874
St. Paul, MN 55164-0874
(877) 602-7397

ITEM 6 SELECTED FINANCIAL DATA

The following selected financial data reflects the results of operations, financial position data and ordinary share information for the fiscal years ended September 30, 2014 through September 30, 2018 (dollars in millions, except per share data).

	Year ended September 30,				
	2018	2017	2016	2015	2014
OPERATING RESULTS					
Net sales	$ 31,400	$ 30,172	$ 20,837	$ 17,100	$ 16,717
Segment EBITA (1)	4,555	4,258	2,754	2,327	2,084
Income from continuing operations attributable to Johnson Controls (6)	2,162	1,654	732	814	906
Net income (loss) attributable to Johnson Controls	2,162	1,611	(868)	1,563	1,215
Earnings per share from continuing operations (6)					
Basic	$ 2.34	$ 1.77	$ 1.10	$ 1.24	$ 1.36
Diluted	2.32	1.75	1.09	1.23	1.34
Return on average shareholders' equity attributable to Johnson Controls (2) (6)	10%	7%	4%	8%	8%
Capital expenditures	$ 1,030	$ 1,343	$ 1,249	$ 1,135	$ 1,199
Depreciation and amortization	1,085	1,188	953	860	955
Number of employees	122,000	121,000	209,000	139,000	168,000
FINANCIAL POSITION					
Working capital (as defined) (3)	$ 1,714	$ 1,608	$ 369	$ 550	$ 989
Total assets	48,797	51,884	63,179	29,590	32,777
Long-term debt	9,654	11,964	11,053	5,367	5,887
Total debt	10,995	13,572	12,759	6,208	6,100
Shareholders' equity attributable to Johnson Controls	21,164	20,447	24,118	10,335	11,270
Total debt to capitalization (4)	34%	40%	35%	38%	35%
Net book value per share (5)	$ 22.88	$ 22.03	$ 25.77	$ 15.96	$ 16.93
ORDINARY SHARE INFORMATION					
Dividends per share	$ 1.04	$ 1.00	$ 1.16	$ 1.04	$ 0.88
Market prices					
High	$ 42.60	$ 46.17	$ 48.97	$ 54.52	$ 52.50
Low	32.89	36.74	30.30	38.48	39.42
Weighted average shares (in millions)					
Basic	925.7	935.3	667.4	655.2	666.9
Diluted	931.7	944.6	672.6	661.5	674.8
Number of shareholders	37,836	40,260	41,299	35,425	36,687

(1) Segment earnings before interest, taxes and amortization ("EBITA") is calculated as income from continuing operations before income taxes and noncontrolling interests, excluding general corporate expenses, intangible asset amortization, net financing charges, significant restructuring and impairment costs, and net mark-to-market adjustments related to pension and postretirement plans. Refer to Note 19, "Segment Information," of the notes to consolidated financial statements for a reconciliation of segment EBITA to income from continuing operations before income taxes.

(2) Return on average shareholders' equity attributable to Johnson Controls represents income from continuing operations attributable to Johnson Controls divided by average shareholders' equity attributable to Johnson Controls.

(3) Working capital is defined as current assets less current liabilities, excluding cash, short-term debt, the current portion of long-term debt, and the current portions of assets and liabilities held for sale.

(4) Total debt to total capitalization represents total debt divided by the sum of total debt and shareholders' equity attributable to Johnson Controls.

(5) Net book value per share represents shareholders' equity attributable to Johnson Controls divided by the number of shares outstanding at the end of the period.

(6) Income from continuing operations attributable to Johnson Controls includes $263 million, $367 million, $288 million, $215 million and $165 million of significant restructuring and impairment costs in fiscal year 2018, 2017, 2016, 2015 and 2014, respectively. It also includes $(10) million, $(420) million, $393 million, $416 million and $187 million of net mark-to-market charges (gains) on pension and postretirement plans in fiscal year 2018, 2017, 2016, 2015 and 2014, respectively. The preceding amounts are stated on a pre-tax basis.

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

General

The Company operates in two primary businesses: Building Technologies & Solutions and Power Solutions. Building Technologies & Solutions provides facility systems and services including comfort and energy management for the residential and non-residential buildings markets, security products and services, and fire detection and suppression products and services. Power Solutions designs and manufactures automotive batteries for the replacement and original equipment markets.

This discussion summarizes the significant factors affecting the consolidated operating results, financial condition and liquidity of the Company for the three-year period ended September 30, 2018. This discussion should be read in conjunction with Item 8, the consolidated financial statements and the notes to consolidated financial statements.

FISCAL YEAR 2018 COMPARED TO FISCAL YEAR 2017

Net Sales

	Year Ended September 30,		
(in millions)	2018	2017	Change
Net sales	$ 31,400	$ 30,172	4%

The increase in consolidated net sales was due to higher sales in the Building Technologies & Solutions business ($1,004 million), the favorable impact of foreign currency translation ($512 million) and higher sales in the Power Solutions business ($467 million), partially offset by lower sales due to business divestitures ($755 million). The increased sales in the Building Technologies & Solutions business, net of divestitures, primarily related to higher volumes across all segments. Increased sales in the Power Solutions business primarily resulted from the impact of higher lead costs on pricing as well as favorable pricing and product mix. Excluding the impact of foreign currency translation, impact of lead costs on pricing and business divestitures, consolidated net sales also increased 4% as compared to the prior year. Refer to the segment analysis below within Item 7 for a discussion of net sales by segment.

Cost of Sales / Gross Profit

	Year Ended September 30,		
(in millions)	2018	2017	Change
Cost of sales	$ 22,020	$ 20,833	6%
Gross profit	9,380	9,339	—%
% of sales	29.9%	31.0%	

Cost of sales increased in fiscal 2018 as compared to fiscal 2017, and gross profit as a percentage of sales decreased by 110 basis points. Gross profit in the Building Technologies & Solutions business increased due to prior year nonrecurring purchase accounting adjustments ($68 million), and higher volumes and favorable mix across all segments, partially offset by business divestitures and higher operating costs. Gross profit in the Power Solutions business was impacted by higher operating costs primarily driven by efforts to satisfy customer demand, partially offset by favorable pricing and product mix. Net mark-to-market adjustments on pension and postretirement plans had a net unfavorable year-over-year impact on cost of sales of $88 million ($16 million charge in fiscal 2018 compared to a $72 million gain in fiscal 2017) primarily due to a decrease in U.S. investment returns. Foreign currency translation had an unfavorable impact on cost of sales of approximately $383 million. Refer to the segment analysis below within Item 7 for a discussion of segment earnings before interest, taxes and amortization ("EBITA") by segment.

Selling, General and Administrative Expenses

	Year Ended September 30,		
(in millions)	2018	2017	Change
Selling, general and administrative expenses	$ 6,010	$ 6,158	-2%
% of sales	19.1%	20.4%	

Selling, general and administrative expenses ("SG&A") decreased by $148 million year over year, and SG&A as a percentage of sales decreased by 130 basis points. The decrease in SG&A was primarily due to productivity savings and costs synergies, business divestitures and a gain on sale of the Scott Safety business in the Building Technologies & Solutions Global Products segment ($114 million). The net favorable year-over-year impact on SG&A resulting from transaction and integration costs was $177 million. Foreign currency translation had an unfavorable impact on SG&A of $78 million. The net mark-to-market adjustments on pension and postretirement plans had a net unfavorable year-over-year impact on SG&A of $322 million ($26 million gain in fiscal 2018 compared to a $348 million gain in fiscal 2017) primarily due to a decrease in U.S. investment returns. Refer to the segment analysis below within Item 7 for a discussion of segment EBITA by segment.

Restructuring and Impairment Costs

	Year Ended September 30,		
(in millions)	2018	2017	Change
Restructuring and impairment costs	$ 263	$ 367	-28%

Refer to Note 16, "Significant Restructuring and Impairment Costs," of the notes to consolidated financial statements for further disclosure related to the Company's restructuring plans.

Net Financing Charges

	Year Ended September 30,		
(in millions)	2018	2017	Change
Net financing charges	$ 441	$ 496	-11%

Refer to Note 9, "Debt and Financing Arrangements," of the notes to consolidated financial statements for further disclosure related to the Company's net financing charges.

Equity Income

	Year Ended September 30,		
(in millions)	2018	2017	Change
Equity income	$ 235	$ 240	-2%

The decrease in equity income was primarily due to lower income at partially-owned affiliates in the Power Solutions business, partially offset by higher income at partially-owned affiliates in the Building Technologies & Solutions business. Refer to the segment analysis below within Item 7 for a discussion of segment EBITA by segment.

Income Tax Provision

(in millions)	Year Ended September 30, 2018	2017	Change
Income tax provision	$ 518	$ 705	-27%
Effective tax rate	18%	28%	

The statutory tax rate in Ireland is being used as a comparison since the Company is domiciled in Ireland. The effective rate is above the statutory rate of 12.5% for fiscal 2018 primarily due to the discrete net impacts of U.S. Tax Reform, final income tax effects of the completed divestiture of the Scott Safety business, legal entity restructuring associated with the Power Solutions business, valuation allowance adjustments and tax rate differentials, partially offset by the benefits of continuing global tax planning initiatives, tax audit closures and tax benefits due to changes in entity tax status. The effective rate is above the statutory rate of 12.5% for fiscal 2017 primarily due to the establishment of a deferred tax liability on the outside basis difference of the Company's investment in certain subsidiaries related to the divestiture of the Scott Safety business, the income tax effects of pension mark-to-market gains and tax rate differentials, partially offset by the jurisdictional mix of significant restructuring and impairment costs, Tyco Merger transaction and integration costs, purchase accounting adjustments, tax audit closures, a tax benefit due to changes in entity tax status and the benefits of continuing global tax planning initiatives. The fiscal 2018 effective tax rate decreased as compared to the fiscal 2017 effective tax rate primarily due to discrete tax items and tax planning initiatives. The fiscal year 2018 and 2017 global tax planning initiatives related primarily to foreign tax credit planning, changes in entity tax status, global financing structures and alignment of the Company's global business functions in a tax efficient manner. Refer to Note 18, "Income Taxes," of the notes to consolidated financial statements for further details.

Valuation Allowances

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

In the fourth quarter of fiscal 2018, the Company performed an analysis related to the realizability of its worldwide deferred tax assets. As a result, and after considering feasible tax planning initiatives and other positive and negative evidence, the Company determined that it was more likely than not that certain deferred tax assets primarily within Germany would not be realized. Therefore, the Company recorded $56 million of valuation allowances as income tax expense in the three month period ended September 30, 2018.

In the fourth quarter of fiscal 2017, the Company performed an analysis related to the realizability of its worldwide deferred tax assets. As a result, and after considering tax planning initiatives and other positive and negative evidence, the Company determined that it was more likely than not that certain deferred tax assets primarily in Canada, China and Mexico would not be able to be realized, and it was more likely than not that certain deferred tax assets in Germany would be realized. Therefore, the Company recorded $27 million of net valuation allowances as income tax expense in the three month period ended September 30, 2017.

Uncertain Tax Positions

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

During fiscal 2018, the Company settled tax examinations impacting fiscal years 2010 to fiscal 2012 which resulted in a $25 million net benefit to income tax expense.

During fiscal 2017, the Company settled a significant number of tax examinations impacting fiscal years 2006 to fiscal 2014. In the fourth quarter of fiscal 2017, income tax audit resolutions resulted in a net $191 million benefit to income tax expense.

The Company's federal income tax returns and certain non-U.S. income tax returns for various fiscal years remain under various stages of audit by the IRS and respective non-U.S. tax authorities. Although the outcome of tax audits is always uncertain, management believes that it has appropriate support for the positions taken on its tax returns and that its annual tax provisions included amounts sufficient to pay assessments, if any, which may be proposed by the taxing authorities. At September 30, 2018, the Company had recorded a liability for its best estimate of the probable loss on certain of its tax positions, the majority of which is included in other noncurrent liabilities in the consolidated statements of financial position. Nonetheless, the amounts ultimately paid, if any, upon resolution of the issues raised by the taxing authorities may differ materially from the amounts accrued for each year.

Other Tax Matters

In the fourth quarter of fiscal 2018, the Company recorded a tax benefit of $139 million due to changes in entity tax status.

In the fourth quarter of fiscal 2018, the Company recorded a tax charge of $129 million due to legal entity restructuring associated with the Power Solutions business.

In the first quarter of fiscal 2018, the Company completed the sale of its Scott Safety business to 3M Company. In connection with the sale, the Company recorded a pre-tax gain of $114 million and income tax expense of $30 million. In addition, during fiscal 2017, the Company recorded a discrete non-cash tax charge of $490 million related to establishment of a deferred tax liability on the outside basis difference of the Company's investment in certain subsidiaries of the Scott Safety business. Refer to Note 3, "Acquisitions and Divestitures," and Note 4, "Discontinued Operations," of the notes to consolidated financial statements for additional information.

During fiscal 2018 and 2017, the Company recorded transaction and integration costs of $234 million and $428 million, respectively. These costs generated tax benefits of $27 million and $69 million, respectively, which reflects the Company’s current tax position in these jurisdictions.

During fiscal 2018 and 2017, the Company incurred significant charges for restructuring and impairment costs of $263 million and $367 million, respectively. Refer to Note 16, "Significant Restructuring and Impairment Costs," of the notes to consolidated financial statements for additional information. These costs generated tax benefits of $38 million and $63 million, respectively, which reflects the Company’s current tax position in these jurisdictions.

During fiscal 2018 and 2017, the Company recorded pension mark-to-market gains of $10 million and $420 million, respectively. These gains generated tax expense (benefit) of $(3) million and $126 million, respectively, which reflects the Company’s current tax position in these jurisdictions.

In the fourth quarter of fiscal 2017, the Company recorded a tax charge of $53 million due to a change in the deferred tax liability related to the outside basis of certain nonconsolidated subsidiaries.

In the first quarter of fiscal 2017, the Company recorded a discrete tax benefit of $101 million due to changes in entity tax status.

Impacts of Tax Legislation and Change in Statutory Tax Rates

On December 22, 2017, the “Tax Cuts and Jobs Act” (H.R. 1) was enacted and significantly revises U.S. corporate income tax by, among other things, lowering corporate income tax rates, imposing a one-time transition tax on deemed repatriated earnings of non-U.S. subsidiaries, and implementing a territorial tax system and various base erosion minimum tax provisions.

In connection with the Company’s analysis of the impact of the U.S. tax law changes, which is provisional and subject to change, the Company recorded a net tax charge of $108 million during fiscal 2018. This provisional net tax charge arises from a benefit of $108 million due to the remeasurement of U.S. deferred tax assets and liabilities, offset by the Company’s tax charge relating to the one-time transition tax on deemed repatriated earnings, inclusive of all relevant taxes, of $216 million. The Company’s estimated benefit of the remeasurement of U.S. deferred tax assets and liabilities increased from $101 million as of December 31, 2017 to $108 million as of September 30, 2018 due to calculation refinement of the Company’s estimated impact. The Company remeasured certain deferred tax assets and liabilities based on the rates at which they are expected to reverse in the future. The Company’s tax charge for transition tax decreased from $305 million as of December 31, 2017 to $216 million as of September 30, 2018 due to further analysis of the Company’s post-1986 non-U.S. earnings and profits (“E&P”) previously deferred from U.S. federal taxation and refinement of the estimated impact of tax law changes.

Based on the effective dates of certain aspects of the U.S. tax law changes, various applicable impacts of the enacted legislation could not be finalized as of September 30, 2018. While the Company made reasonable estimates of the impact of the transition tax, the final impact of the U.S. tax law changes may differ from these estimated impacts, due to, future treasury regulations, tax law technical corrections, notices, rulings, refined computations, and other items. The Company will finalize such provisional amounts within the time period prescribed by Staff Accounting Bulletin 118.

During the fiscal years ended 2018 and 2017, other tax legislation was adopted in various jurisdictions. These law changes did not have a material impact on the Company's consolidated financial statements.

Loss From Discontinued Operations, Net of Tax

	Year Ended September 30,		
(in millions)	2018	2017	Change
Loss from discontinued operations, net of tax	$ —	$ (34)	*

* Measure not meaningful

Refer to Note 4, "Discontinued Operations," of the notes to consolidated financial statements for further information.

Income Attributable to Noncontrolling Interests

	Year Ended September 30,		
(in millions)	2018	2017	Change
Income from continuing operations attributable to noncontrolling interests	$ 221	$ 199	11%
Income from discontinued operations attributable to noncontrolling interests	—	9	*

* Measure not meaningful

The increase in income from continuing operations attributable to noncontrolling interests was primarily due to higher net income related to the Johnson Controls - Hitachi joint venture in the Building Technologies & Solutions business and higher net income at a Power Solutions partially-owned affiliate.

Refer to Note 4, "Discontinued Operations," of the notes to consolidated financial statements for further information regarding the Company's discontinued operations.

Net Income Attributable to Johnson Controls

	Year Ended September 30,		
(in millions)	2018	2017	Change
Net income attributable to Johnson Controls	$ 2,162	$ 1,611	34%

The increase in net income attributable to Johnson Controls was primarily due to lower income tax provision due to higher discrete period net tax charges in the prior year, lower SG&A, lower restructuring and impairment costs, lower net financing charges and higher gross profit. Fiscal 2018 diluted earnings per share attributable to Johnson Controls was $2.32 compared to $1.71 in fiscal 2017.

Comprehensive Income Attributable to Johnson Controls

	Year Ended September 30,		
(in millions)	2018	2017	Change
Comprehensive income attributable to Johnson Controls	$ 1,689	$ 1,710	-1%

The decrease in comprehensive income attributable to Johnson Controls was due to a decrease in other comprehensive income attributable to Johnson Controls ($572 million) resulting primarily from unfavorable foreign currency translation adjustments, partially offset by higher net income attributable to Johnson Controls ($551 million). These year-over-year unfavorable foreign currency translation adjustments were primarily driven by the weakening of the British pound and euro currencies against the U.S. dollar.

SEGMENT ANALYSIS

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

Building Technologies & Solutions

	Net Sales for the Year Ended September 30,			Segment EBITA for the Year Ended September 30,		
(in millions)	2018	2017	Change	2018	2017	Change
Building Solutions North America	$ 8,679	$ 8,341	4%	$ 1,109	$ 1,039	7%
Building Solutions EMEA/LA	3,696	3,595	3%	344	290	19%
Building Solutions Asia Pacific	2,553	2,444	4%	347	323	7%
Global Products	8,472	8,455	—%	1,338	1,179	13%
	$ 23,400	$ 22,835	2%	$ 3,138	$ 2,831	11%

Net Sales:

- The increase in Building Solutions North America was due to higher volumes ($343 million) and the favorable impact of foreign currency translation ($20 million), partially offset by the impact of prior year nonrecurring purchase accounting adjustments ($25 million). The increase in volumes was primarily attributable to higher HVAC, controls, fire and security sales.

- The increase in Building Solutions EMEA/LA was due to the favorable impact of foreign currency translation ($132 million), higher volumes ($63 million) and incremental sales related to a business acquisition ($2 million), partially offset by lower volumes related to a business divestiture ($80 million) and the impact of prior year nonrecurring purchase accounting adjustments ($16 million). The increase in volumes was primarily attributable to strong service growth which was positive across all regions led by Europe and Latin America.

- The increase in Building Solutions Asia Pacific was due to higher volumes ($61 million), the favorable impact of foreign currency translation ($61 million) and the impact of prior year nonrecurring purchase accounting adjustments ($1 million), partially offset by lower volumes related to a business divestiture ($14 million). The increase in volumes was primarily attributable to higher service sales.

- The increase in Global Products was due to higher volumes ($571 million), the favorable impact of foreign currency translation ($103 million) and the impact of prior year nonrecurring purchase accounting adjustments ($6 million), partially offset by lower volumes related to business divestitures ($663 million). The increase in volumes was primarily attributable to higher building management, HVAC and refrigeration equipment, and specialty products sales.

Segment EBITA:

- The increase in Building Solutions North America was due to favorable volumes / mix ($100 million), prior year integration costs ($42 million), prior year transaction costs ($13 million), and the favorable impact of foreign currency translation ($1 million), partially offset by higher SG&A including incremental salesforce investments ($37 million), current year integration costs ($25 million) and prior year nonrecurring purchase accounting adjustments ($24 million).

- The increase in Building Solutions EMEA/LA was due to a prior year unfavorable arbitration award ($50 million), favorable volumes / mix ($26 million), lower SG&A ($14 million), the favorable impact of foreign currency translation ($7 million), prior year integration costs ($6 million) and prior year transaction costs ($5 million), partially offset by prior year nonrecurring purchase accounting adjustments ($23 million), incremental salesforce investments ($14 million), current year integration costs ($6 million), higher operating costs ($5 million), lower equity income ($4 million) and lower income due to a business divestiture ($2 million).

- The increase in Building Solutions Asia Pacific was due to higher volumes / mix ($33 million), prior year integration costs ($5 million), prior year transaction costs ($2 million), prior year nonrecurring purchase accounting adjustments ($2 million) and the favorable impact of foreign currency translation ($1 million), partially offset by higher SG&A including incremental salesforce investments ($15 million), and unfavorable pricing ($4 million).

- The increase in Global Products was due to favorable volumes / mix ($219 million), a gain on sale of Scott Safety ($114 million), prior year nonrecurring purchase accounting adjustments ($71 million), higher equity income ($25 million), prior year integration costs ($25 million), the favorable impact of foreign currency translation ($20 million) and prior year transaction costs ($13 million). These items were partially offset by lower income due to business divestitures ($167 million), higher SG&A and operating expenses including planned incremental global product and channel investments, partially offset by productivity savings and gains on business divestitures ($134 million), and current year integration costs ($27 million).

Power Solutions

(in millions)	Year Ended September 30, 2018	Year Ended September 30, 2017	Change
Net sales	$ 8,000	$ 7,337	9%
Segment EBITA	1,417	1,427	-1%

- Net sales increased due to the impact of higher lead costs on pricing ($269 million), the favorable impact of foreign currency translation ($196 million), favorable pricing and product mix ($159 million), and higher volumes ($39 million). The increase in volumes was driven by growth in China and an increase in start-stop battery volumes, partially offset by changes in customer demand patterns in North America. Additionally, higher start-stop volumes contributed to favorable product mix.

- Segment EBITA decreased due to higher operating costs primarily driven by efforts to satisfy customer demand including higher transportation costs ($112 million), incremental investments ($31 million), lower equity income ($20 million), current year transaction costs ($8 million), and restructuring costs and discontinued operation losses included in equity income ($7 million), partially offset by lower SG&A from productivity savings and a gain on a business deconsolidation ($104 million), favorable pricing and product mix ($35 million), the favorable impact of foreign currency translation ($22 million), higher volumes ($6 million) and prior year transaction costs ($1 million).

FISCAL YEAR 2017 COMPARED TO FISCAL YEAR 2016

Net Sales

(in millions)	Year Ended September 30, 2017	Year Ended September 30, 2016	Change
Net sales	$ 30,172	$ 20,837	45%

The increase in consolidated net sales was due to higher sales in the Building Technologies & Solutions business ($8,647 million) and Power Solutions business ($667 million), and the favorable impact of foreign currency translation ($21 million). Increased sales resulted from the Tyco Merger, as well as higher volumes in the Global Products segment, the impact of higher lead costs on pricing, and favorable pricing and product mix in the Power Solutions business. Excluding the impact of the Tyco Merger and foreign currency translation, consolidated net sales increased 4% as compared to the prior year. Refer to the segment analysis below within Item 7 for a discussion of net sales by segment.

Cost of Sales / Gross Profit

	Year Ended September 30,		
(in millions)	2017	2016	Change
Cost of sales	$ 20,833	$ 15,183	37%
Gross profit	9,339	5,654	65%
% of sales	31.0%	27.1%	

Cost of sales increased in fiscal 2017 as compared to fiscal 2016, with gross profit as a percentage of sales increasing by 390 basis points. Gross profit in the Building Technologies & Solutions business included the incremental gross profit related to the Tyco Merger, and higher volumes in the Global Products segment. Gross profit in the Power Solutions business was favorably impacted by favorable pricing and product mix net of lead cost increases and higher volumes, partially offset by higher operating costs. Net mark-to-market adjustments on pension and postretirement plans had a net favorable year-over-year impact on cost of sales of $169 million ($72 million gain in fiscal 2017 compared to a $97 million charge in fiscal 2016) primarily due to an increase in year-over-year discount rates and favorable U.S. investment returns versus expectations in the current year. Foreign currency translation had an unfavorable impact on cost of sales of approximately $21 million. Refer to the segment analysis below within Item 7 for a discussion of segment EBITA by segment.

Selling, General and Administrative Expenses

	Year Ended September 30,		
(in millions)	2017	2016	Change
Selling, general and administrative expenses	$ 6,158	$ 4,190	47%
% of sales	20.4%	20.1%	

SG&A increased by $1,968 million year over year, and SG&A as a percentage of sales increased by 30 basis points. The Building Technologies & Solutions business SG&A increased primarily due to incremental SG&A related to the Tyco Merger, partially offset by productivity savings and cost synergies. Foreign currency translation had an unfavorable impact on SG&A of $5 million. The net unfavorable year-over-year impact on SG&A resulting from transaction, integration and separation costs was $149 million. The net mark-to-market adjustments on pension and postretirement plans had a net favorable year-over-year impact on SG&A of $644 million ($348 million gain in fiscal 2017 compared to a $296 million charge in fiscal 2016) primarily due to an increase in year-over-year discount rates and favorable U.S. investment returns versus expectations in the current year. Refer to the segment analysis below within Item 7 for a discussion of segment EBITA by segment.

Restructuring and Impairment Costs

	Year Ended September 30,		
(in millions)	2017	2016	Change
Restructuring and impairment costs	$ 367	$ 288	27%

Refer to Note 16, "Significant Restructuring and Impairment Costs," of the notes to consolidated financial statements for further disclosure related to the Company's restructuring plans.

Net Financing Charges

(in millions)	Year Ended September 30, 2017	2016	Change
Net financing charges	$ 496	$ 289	72%

Refer to Note 9, "Debt and Financing Arrangements," of the notes to consolidated financial statements for further disclosure related to the Company's net financing charges.

Equity Income

(in millions)	Year Ended September 30, 2017	2016	Change
Equity income	$ 240	$ 174	38%

The increase in equity income was primarily due to higher income at certain partially-owned affiliates of the Power Solutions business and the Johnson Controls - Hitachi joint venture in the Building Technologies & Solutions business. Refer to the segment analysis below within Item 7 for a discussion of segment EBITA by segment.

Income Tax Provision

(in millions)	Year Ended September 30, 2017	2016	Change
Income tax provision	$ 705	$ 197	*
Effective tax rate	28%	19%	

* Measure not meaningful

The statutory tax rate in Ireland is being used as a comparison for fiscal 2017 since the Company is domiciled in Ireland. The U.S. federal statutory rate is being used as a comparison for fiscal 2016 since the Company was a U.S. domiciled company for 11 months of fiscal 2016. The effective rate is above the statutory rate of 12.5% for fiscal 2017 primarily due to the establishment of a deferred tax liability on the outside basis difference of the Company's investment in certain subsidiaries related to the divestiture of the Scott Safety business, the income tax effects of pension mark-to-market gains and tax rate differentials, partially offset by the jurisdictional mix of significant restructuring and impairment costs, Tyco Merger transaction and integration costs, purchase accounting adjustments, tax audit closures, a tax benefit due to changes in entity tax status and the benefits of continuing global tax planning initiatives. The effective rate is below the U.S. statutory rate of 35% for fiscal 2016 primarily due to the benefits of continuing global tax planning initiatives and foreign tax rate differentials, partially offset by the jurisdictional mix of restructuring and impairment costs, and the tax impacts of the Merger and integration related costs. The fiscal 2017 effective tax rate increased as compared to the fiscal 2016 effective tax rate primarily due to the tax effects of transactions ($408 million), and the tax effects of restructuring and impairment costs ($37 million), partially offset by the tax effects of reserve and valuation allowance adjustments ($164 million) and tax planning initiatives. The fiscal year 2017 and 2016 global tax planning initiatives related primarily to foreign tax credit planning, changes in entity tax status, global financing structures and alignment of the Company's global business functions in a tax efficient manner. Refer to Note 18, "Income Taxes," of the notes to consolidated financial statements for further details.

Valuation Allowances

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

In the fourth quarter of fiscal 2017, the Company performed an analysis related to the realizability of its worldwide deferred tax assets. As a result, and after considering tax planning initiatives and other positive and negative evidence, the Company determined that it was more likely than not that certain deferred tax assets primarily in Canada, China and Mexico would not be able to be realized, and it was more likely than not that certain deferred tax assets in Germany would be realized. Therefore, the Company recorded $27 million of net valuation allowances as income tax expense in the three month period ended September 30, 2017.

In the fourth quarter of fiscal 2016, the Company performed an analysis related to the realizability of its worldwide deferred tax assets. As a result, and after considering tax planning initiatives and other positive and negative evidence, the Company determined that no other material changes were needed to its valuation allowances. Therefore, there was no impact to income tax expense due to valuation allowance changes in the three month period or year ended September 30, 2016.

Uncertain Tax Positions

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

During fiscal 2017, the Company settled a significant number of tax examinations impacting fiscal years 2006 to fiscal 2014. In the fourth quarter of fiscal 2017, income tax audit resolutions resulted in a net $191 million benefit to income tax expense.

The Company's federal income tax returns and certain non-U.S. income tax returns for various fiscal years remain under various stages of audit by the IRS and respective non-U.S. tax authorities. Although the outcome of tax audits is always uncertain, management believes that it has appropriate support for the positions taken on its tax returns and that its annual tax provisions included amounts sufficient to pay assessments, if any, which may be proposed by the taxing authorities. At September 30, 2017, the Company had recorded a liability for its best estimate of the probable loss on certain of its tax positions, the majority of which is included in other noncurrent liabilities in the consolidated statements of financial position. Nonetheless, the amounts ultimately paid, if any, upon resolution of the issues raised by the taxing authorities may differ materially from the amounts accrued for each year.

Other Tax Matters

During fiscal 2017, the Company recorded $428 million of transaction and integration costs which generated a $69 million tax benefit.

During fiscal 2017, the Company recorded a discrete non-cash tax charge of $490 million related to establishment of a deferred tax liability on the outside basis difference of the Company's investment in certain subsidiaries of the Scott Safety business. This business is reported as net assets held for sale given the announced sale to 3M Company. Refer to Note 3, "Acquisitions and Divestitures," and Note 4, "Discontinued Operations," of the notes to consolidated financial statements for additional information.

In the fourth quarter of fiscal 2017, the Company recorded a tax charge of $53 million due to a change in the deferred tax liability related to the outside basis of certain nonconsolidated subsidiaries.

In the first quarter of fiscal 2017, the Company recorded a discrete tax benefit of $101 million due to changes in entity tax status.

During fiscal 2017 and 2016, the Company incurred significant charges for restructuring and impairment costs. Refer to Note 16, "Significant Restructuring and Impairment Costs," of the notes to consolidated financial statements for additional information. These costs generated tax benefits of $63 million and $76 million, respectively, which reflects the Company's current tax position in these jurisdictions.

During the fourth quarter of fiscal 2016, the Company completed its merger with Tyco. As a result of that transaction, the Company incurred incremental tax expense of $137 million. In preparation for the spin-off of the Automotive Experience business in the first quarter of fiscal 2017, the Company incurred incremental tax expense for continuing operations of $26 million in fiscal 2016.

Impacts of Tax Legislation and Change in Statutory Tax Rates

On October 13, 2016, the U.S. Treasury and the IRS released final and temporary Section 385 regulations. These regulations address whether certain instruments between related parties are treated as debt or equity.

The "look-through rule," under subpart F of the U.S. Internal Revenue Code, expired for the Company on September 30, 2015. The "look-through rule" had provided an exception to the U.S. taxation of certain income generated by foreign subsidiaries. The rule was extended in December 2015 retroactive to the beginning of the Company’s 2016 fiscal year. The retroactive extension was signed into legislation and was made permanent through the Company's 2020 fiscal year.

During the fiscal years ended 2017 and 2016, other tax legislation was adopted in various jurisdictions. These law changes did not have a material impact on the Company's consolidated financial statements.

Loss From Discontinued Operations, Net of Tax

	Year Ended September 30,		
(in millions)	2017	2016	Change
Loss from discontinued operations, net of tax	$ (34)	$ (1,516)	*

* Measure not meaningful

Refer to Note 4, "Discontinued Operations," of the notes to consolidated financial statements for further information.

Income Attributable to Noncontrolling Interests

	Year Ended September 30,		
(in millions)	2017	2016	Change
Income from continuing operations attributable to noncontrolling interests	$ 199	$ 132	51%
Income from discontinued operations attributable to noncontrolling interests	9	84	-89%

The increase in income from continuing operations attributable to noncontrolling interests for fiscal 2017 was primarily due to higher net income related to the Johnson Controls - Hitachi joint venture in the Building Technologies & Solutions business.

Refer to Note 4, "Discontinued Operations," of the notes to consolidated financial statements for further information regarding the Company's discontinued operations.

Net Income (Loss) Attributable to Johnson Controls

	Year Ended September 30,		
(in millions)	2017	2016	Change
Net income (loss) attributable to Johnson Controls	$ 1,611	$ (868)	*

* Measure not meaningful

The increase in net income (loss) attributable to Johnson Controls was primarily due to incremental operating income as a result of the Tyco Merger and a prior year net loss from discontinued operations, partially offset by an increase in the income tax provision and higher net financing charges. Fiscal 2017 diluted earnings (loss) per share attributable to Johnson Controls was $1.71 compared to ($1.29) in fiscal 2016.

Comprehensive Income (Loss) Attributable to Johnson Controls

	Year Ended September 30,		
(in millions)	2017	2016	Change
Comprehensive income (loss) attributable to Johnson Controls	$ 1,710	$ (964)	*

* Measure not meaningful

The increase in comprehensive income (loss) attributable to Johnson Controls was due to higher net income (loss) attributable to Johnson Controls ($2,479 million) and an increase in other comprehensive loss attributable to Johnson Controls ($195 million) primarily related to favorable foreign currency translation adjustments. These year-over-year favorable foreign currency translation adjustments were primarily driven by the strengthening of the euro and British pound currencies against the U.S. dollar, partially offset by the weakening of the Japanese yen currency against the U.S. dollar.

Segment Analysis

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

Building Technologies & Solutions

	Net Sales for the Year Ended September 30,			Segment EBITA for the Year Ended September 30,		
(in millions)	2017	2016	Change	2017	2016	Change
Building Solutions North America	$ 8,341	$ 4,687	78%	$ 1,039	$ 494	*
Building Solutions EMEA/LA	3,595	1,613	*	290	74	*
Building Solutions Asia Pacific	2,444	1,736	41%	323	222	45%
Global Products	8,455	6,148	38%	1,179	637	85%
	$ 22,835	$ 14,184	61%	$ 2,831	$ 1,427	98%

* Measure not meaningful

Net Sales:

- The increase in Building Solutions North America was due to incremental sales related to the Tyco Merger including current year nonrecurring purchase accounting adjustments ($3,689 million), the impact of prior year nonrecurring purchase accounting adjustments ($15 million) and the favorable impact of foreign currency translation ($5 million), partially offset by a prior year business divestiture ($32 million) and lower installation volumes ($23 million).

- The increase in Building Solutions EMEA/LA was due to incremental sales related to the Tyco Merger including current year nonrecurring purchase accounting adjustments ($1,982 million), higher volumes ($7 million), the impact of prior year nonrecurring purchase accounting adjustments ($5 million) and the favorable impact of foreign currency translation ($3 million), partially offset by a business divestiture ($15 million).

- The increase in Building Solutions Asia Pacific was due to incremental sales related to the Tyco Merger including current year nonrecurring purchase accounting adjustments ($653 million), higher volumes of equipment and control systems ($41 million), and higher service volumes ($38 million), partially offset by the unfavorable impact of foreign currency translation ($24 million). The increase in volume was driven by favorable local economic conditions.

- The increase in Global Products was due to incremental sales related to the Tyco Merger including current year nonrecurring purchase accounting adjustments ($2,157 million), higher volumes ($221 million) and the favorable impact of foreign currency translation ($20 million), partially offset by lower volumes related to business divestitures and deconsolidation ($91 million). The increase in volumes was primarily attributable to new product offerings.

Segment EBITA:

- The increase in Building Solutions North America was due to incremental income related to the Tyco Merger ($567 million), the net impact of prior year and current year nonrecurring purchase accounting adjustments ($52 million), favorable mix ($9 million), lower SG&A ($3 million) as a result of productivity and synergy savings net of a prior year gain on business divestiture, the favorable impact of foreign currency translation ($1 million) and prior year transaction costs ($1 million), partially offset by current year integration costs ($42 million), higher operating costs as a result of channel investments ($25 million), current year transaction costs ($13 million), lower volumes ($6 million) and a prior year business divestiture ($2 million).

- The increase in Building Solutions EMEA/LA was due to incremental income related to the Tyco Merger ($221 million), the net impact of prior year and current year nonrecurring purchase accounting adjustments ($33 million), lower SG&A as a result of productivity and synergy savings ($23 million), favorable mix ($7 million), higher volumes ($2 million) and prior year transaction costs ($1 million), partially offset by a current year unfavorable arbitration award ($50 million), current year integration costs ($6 million), lower equity income ($6 million), current year transaction costs ($5 million), the unfavorable impact of foreign currency translation ($3 million) and a prior year business divestiture ($1 million).

- The increase in Building Solutions Asia Pacific was due to incremental income related to the Tyco Merger ($73 million), lower SG&A as a result of productivity savings ($24 million), higher volumes ($20 million) and the favorable impact of foreign currency translation ($1 million), partially offset by unfavorable mix ($6 million), current year integration costs ($5 million), higher operating costs ($4 million) and current year transaction costs ($2 million).

- The increase in Global Products was due to incremental income related to the Tyco Merger ($474 million), higher volumes ($55 million), lower SG&A as a result of productivity and synergy savings ($41 million), higher equity income ($33 million), prior year integration costs ($20 million), prior year transaction costs ($14 million) and lower operating costs ($13 million), partially offset by the net impact of prior year and current year nonrecurring purchase accounting adjustments ($42 million), current year integration costs ($25 million), unfavorable mix ($16 million), current year transaction costs ($13 million), the unfavorable impact of foreign currency translation ($5 million), a prior year gain on acquisition of partially-owned affiliate ($4 million) and business divestitures ($3 million).

Power Solutions

	Year Ended September 30,		
(in millions)	2017	2016	Change
Net sales	$ 7,337	$ 6,653	10%
Segment EBITA	1,427	1,327	8%

- Net sales increased due to the impact of higher lead costs on pricing ($427 million) favorable pricing and product mix ($154 million), higher sales volumes ($86 million) and the favorable impact of foreign currency translation ($17 million). The increase in volumes was driven by start-stop battery volumes and growth in China. Additionally, higher start-stop volumes contributed to favorable product mix.

- Segment EBITA increased due to favorable pricing and product mix net of lead cost increases ($106 million), lower SG&A as a result of productivity savings ($39 million), higher equity income ($28 million), higher volumes ($27 million), prior year restructuring and impairment costs included in equity income ($7 million), prior year transaction costs ($1 million) and the favorable impact of foreign currency translation ($1 million), partially offset by higher operating costs primarily driven by efforts to satisfy growing customer demand ($108 million) and current year transaction costs ($1 million).

GOODWILL, LONG-LIVED ASSETS AND OTHER INVESTMENTS

Goodwill at September 30, 2018 was $19.5 billion, $0.2 billion lower than the prior year. The decrease was primarily due to the impact of foreign currency translation.

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

The assumptions included in the impairment tests require judgment, and changes to these inputs could impact the results of the calculations. The primary assumptions used in the impairment tests were management's projections of future cash flows. Although the Company's cash flow forecasts are based on assumptions that are considered reasonable by management and consistent with the plans and estimates management is using to operate the underlying businesses, there are significant judgments in determining the expected future cash flows attributable to a reporting unit.

Indefinite-lived other intangible assets are also subject to at least annual impairment testing. A considerable amount of management judgment and assumptions are required in performing the impairment tests.

While the Company believes the judgments and assumptions used in the impairment tests are reasonable and no impairments of goodwill or indefinite-lived assets existed during fiscal years 2018, 2017 and 2016, different assumptions could change the estimated fair values and, therefore, impairment charges could be required, which could be material to the consolidated financial statements.

The Company reviews long-lived assets, including tangible assets and other intangible assets with definitive lives, for impairment whenever events or changes in circumstances indicate that the asset's carrying amount may not be recoverable. The Company conducts its long-lived asset impairment analyses in accordance with ASC 360-10-15, "Impairment or Disposal of Long-Lived Assets," ASC 350-30, "General Intangibles Other than Goodwill" and ASC 985-20, "Costs of software to be sold, leased, or marketed." ASC 360-10-15 requires the Company to group assets and liabilities at the lowest level for which identifiable cash flows are largely independent of the cash flows of other assets and liabilities and evaluate the asset group against the sum of the undiscounted future cash flows. If the undiscounted cash flows do not indicate the carrying amount of the asset group is recoverable, an impairment charge is measured as the amount by which the carrying amount of the asset group exceeds its fair value based on discounted cash flow analysis or appraisals. ASC 350-30 requires intangible assets acquired in a business combination that are used in research and development activities to be considered indefinite lived until the completion or abandonment of the associated research and development efforts. During the period that those assets are considered indefinite lived, they shall not be amortized but shall be tested for impairment annually and more frequently if events or changes in circumstances indicate that it is more likely than not that the asset is impaired. If the carrying amount of an intangible asset exceeds its fair value, an entity shall recognize an impairment loss in an amount equal to that excess. ASC 985-20 requires the unamortized capitalized costs of a computer software product be compared to the net realizable value of that product. The amount by which the unamortized capitalized costs of a computer software product exceed the net realizable value of that asset shall be written off.

In fiscal 2018, the Company concluded it had a triggering event requiring assessment of impairment for certain of its long-lived assets in conjunction with its restructuring actions announced in fiscal 2018. As a result, the Company reviewed the long-lived assets for impairment and recorded $42 million of asset impairment charges within restructuring and impairment costs in the consolidated statements of income. Of the total impairment charges, $31 million related to the Global Products segment, $6 million related to the Power Solutions segment and $5 million related to Corporate assets. Refer to Note 16, "Significant Restructuring and Impairment Costs," of the notes to consolidated financial statements for additional information. The impairments were measured under a market approach utilizing an appraisal to determine fair values of the impaired assets. This method is consistent with the methods the Company employed in prior periods to value other long-lived assets. The inputs utilized in the analyses are classified as Level 3 inputs within the fair value hierarchy as defined in ASC 820, "Fair Value Measurement."

In fiscal 2017, the Company concluded it had triggering events requiring assessment of impairment for certain of its long-lived assets in conjunction with its restructuring actions announced in fiscal 2017. As a result, the Company reviewed the long-lived assets for impairment and recorded $77 million of asset impairment charges within restructuring and impairment costs on the consolidated statements of income. Of the total impairment charges, $30 million related to the Building Solutions North America segment, $20 million related to the Global Products segment, $19 million related to Corporate assets, $7 million related to the Power Solutions segment and $1 million related to the Building Solutions Asia Pacific segment. Refer to Note 16, "Significant Restructuring and Impairment Costs," of the notes to consolidated financial statements for additional information. The impairments were measured, depending on the asset, under either an income approach utilizing forecasted discounted cash flows or a market approach utilizing an appraisal to determine fair values of the impaired assets. These methods are consistent with the methods the Company employed in prior periods to value other long-lived assets. The inputs utilized in the analyses are classified as Level 3 inputs within the fair value hierarchy as defined in ASC 820, "Fair Value Measurement."

In fiscal 2016, the Company concluded it had triggering events requiring assessment of impairment for certain of its long-lived assets in conjunction with its restructuring actions announced in fiscal 2016. As a result, the Company reviewed the long-lived assets for impairment and recorded $103 million of asset impairment charges within restructuring and impairment costs on the consolidated statements of income. Of the total impairment charges, $64 million related to the Power Solutions segment, $24 million related to Corporate assets, $8 million related to the Global Products segment, $4 million related to the Building Solutions Asia Pacific segment and $3 million related to the Building Solutions EMEA/LA segment. In addition, the Company recorded $87 million of asset impairments within discontinued operations related to Adient in fiscal 2016. Refer to Note 16, "Significant

Restructuring and Impairment Costs," of the notes to consolidated financial statements for additional information. The impairments were measured, depending on the asset, under either an income approach utilizing forecasted discounted cash flows or a market approach utilizing an appraisal to determine fair values of the impaired assets. These methods are consistent with the methods the Company employed in prior periods to value other long-lived assets. The inputs utilized in the analyses are classified as Level 3 inputs within the fair value hierarchy as defined in ASC 820, "Fair Value Measurement."

Investments in partially-owned affiliates ("affiliates") at September 30, 2018 were $1.3 billion, $0.1 billion higher than the prior year. The increase was primarily due to equity income from partially-owned affiliates in the Power Solutions business and the Johnson Controls - Hitachi joint venture.

LIQUIDITY AND CAPITAL RESOURCES

Working Capital

(in millions)	September 30, 2018	September 30, 2017	Change
Current assets	$ 11,823	$ 12,292	
Current liabilities	(11,250)	(11,854)	
	573	438	31%
Less: Cash	(200)	(321)	
Add: Short-term debt	1,315	1,214	
Add: Current portion of long-term debt	26	394	
Less: Assets held for sale	—	(189)	
Add: Liabilities held for sale	—	72	
Working capital (as defined)	$ 1,714	$ 1,608	7%
Accounts receivable	$ 7,065	$ 6,666	6%
Inventories	3,224	3,209	—%
Accounts payable	4,644	4,271	9%

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

- The increase in working capital at September 30, 2018 as compared to September 30, 2017, was primarily due to an increase in accounts receivable due to organic sales growth, partially offset by an increase in accounts payable due to timing and mix of supplier payments.

- The Company’s days sales in accounts receivable at September 30, 2018 were 66, a slight increase from 65 at September 30, 2017. There has been no significant adverse change in the level of overdue receivables or changes in revenue recognition methods.

- The Company’s inventory turns for the year ended September 30, 2018 were slightly higher than the comparable period ended September 30, 2017 primarily due to changes in inventory production levels.

- Days in accounts payable at September 30, 2018 were 73 days, higher than 70 days at the comparable period ended September 30, 2017.

Cash Flows

(in millions)	Year Ended September 30, 2018	2017
Cash provided by operating activities	$ 2,513	$ 31
Cash provided (used) by investing activities	1,215	(1,137)
Cash provided (used) by financing activities	(3,752)	698
Capital expenditures	(1,030)	(1,343)

- The increase in cash provided by operating activities was primarily due to favorable movements in working capital balances, higher prior year income tax payments related to the Adient spin-off ($1.2 billion in the first quarter of fiscal 2017), and prior year operating cash outflows in the Automotive Experience business before the Adient spin-off, change in control pension payments and transaction/integration related payments.

- The increase in cash provided by investing activities was primarily due to net cash proceeds received from the Scott Safety business divestiture in the current year and a decrease in capital expenditures.

- The increase in cash used by financing activities was primarily due to higher current year repayments of long-term debt.

- The decrease in capital expenditures in the current year is primarily related to lower capital investments in the current year in the Building Technologies & Solutions and Power Solution businesses, and prior year capital investments in the Automotive Experience business before the Adient spin-off.

Capitalization

(in millions)	September 30, 2018	September 30, 2017	Change
Short-term debt	$ 1,315	$ 1,214	
Current portion of long-term debt	26	394	
Long-term debt	9,654	11,964	
Total debt	$ 10,995	$ 13,572	-19%
Less: cash and cash equivalents	200	321	
Total net debt	$ 10,795	$ 13,251	-19%
Shareholders' equity attributable to Johnson Controls ordinary shareholders	21,164	20,447	4%
Total capitalization	$ 31,959	$ 33,698	-5%
Total net debt as a % of total capitalization	33.8%	39.3%	

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

- The Company believes its capital resources and liquidity position at September 30, 2018 are adequate to meet projected needs. The Company believes requirements for working capital, capital expenditures, dividends, stock repurchases, minimum pension contributions, debt maturities and any potential acquisitions in fiscal 2019 will continue to be funded from operations, supplemented by short- and long-term borrowings, if required. The Company currently manages its short-term debt position in the U.S. and euro commercial paper markets and bank loan markets. In the event the Company and Tyco International Holding S.a.r.L.'s ("TSarl") are unable to issue commercial paper, they would have the ability to draw on their $2.0 billion and $1.25 billion revolving credit facilities, respectively. Both facilities mature in August 2020. There were no draws on the revolving credit facilities as of September 30, 2018 and 2017. The Company also selectively makes use of short-term credit lines other than its revolving credit facilities at the Company and TSarl. The Company estimates that, as of September 30, 2018, it could borrow up to $2.0 billion based on average borrowing levels during the fourth quarter of fiscal 2018 on committed credit lines. As such, the Company believes it has sufficient financial resources to fund operations and meet its obligations for the foreseeable future.

- The Company's debt financial covenant in its revolving credit facility requires a minimum consolidated shareholders' equity attributable to Johnson Controls of at least $3.5 billion at all times. The revolving credit facility also limits the amount of debt secured by liens that may be incurred to a maximum aggregated amount of 10% of consolidated shareholders' equity attributable to Johnson Controls for liens and pledges. For purposes of calculating these covenants, consolidated shareholders' equity attributable to Johnson Controls is calculated without giving effect to (i) the application of Accounting Standards Codification ("ASC") 715-60, "Defined Benefit Plans - Other Postretirement," or (ii) the cumulative foreign currency translation adjustment. TSarl's revolving credit facility contains customary terms and conditions, and a financial covenant that limits the ratio of TSarl's debt to earnings before interest, taxes, depreciation, and amortization as adjusted for certain items set forth in the agreement to 3.5x. TSarl's revolving credit facility also limits its ability to incur subsidiary debt or grant liens on its and its subsidiaries' property. As of September 30, 2018, the Company and TSarl were in compliance with all covenants and other requirements set forth in their credit agreements and the indentures, governing their notes, and expect to remain in compliance for the foreseeable future. None of the Company's or TSarl's debt agreements limit access to stated borrowing levels or require accelerated repayment in the event of a decrease in the respective borrower's credit rating.

- The Company earns a significant amount of its income outside of the parent company. Outside basis differences in these subsidiaries are deemed to be permanently reinvested except in limited circumstances including a limited accrual related to fiscal 2018 U.S. Tax Reform. In fiscal 2018, due to U.S. Tax Reform, the Company provided income tax related to the change in the Company's assertion over the outside basis difference of certain non-U.S. subsidiaries owned directly or indirectly by U.S. subsidiaries. Under U.S. Tax Reform, the U.S. has enacted a tax system that provides an exemption for dividends received by U.S. corporations from 10% or more owned non-U.S. corporations. However, certain non-U.S, U.S. state and withholding taxes may still apply when closing an outside basis difference via distribution or other transactions. In addition, in fiscal 2017, the Company provided income tax expense related to a change in the Company's assertion over the outside basis difference of the Scott Safety business as a result of the pending divestiture as well as the outside basis of certain nonconsolidated subsidiaries. Also, in fiscal 2016, the Company provided income tax expense related to a change in the Company's assertion over a portion of the permanently reinvested earnings as a result of the planned spin-off of the Adient business. The Company currently does not intend nor foresee a need to repatriate undistributed earnings included in the outside basis differences other than in tax efficient manners. Except as noted, the Company's intent is to reduce basis differences only when it would be tax efficient. The Company expects existing U.S. cash and liquidity to continue to be sufficient to fund the Company's U.S. operating activities and cash commitments for investing and financing activities for at least the next twelve months and thereafter for the foreseeable future. In the U.S., should the Company require more capital than is generated by its operations, the Company could elect to raise capital in the U.S. through debt or equity issuances. The Company has borrowed funds in the U.S. and continues to have the ability to borrow funds in the U.S. at reasonable interest rates. In addition, the Company expects existing non-U.S. cash, cash equivalents, short-term investments and cash flows from operations to continue to be sufficient to fund the Company's non-U.S. operating activities and cash commitments for investing activities, such as material capital expenditures, for at least the next twelve months and thereafter for the foreseeable future. Should the Company require more capital at the Luxembourg and Ireland holding and financing entities, other than amounts that can be provided in tax efficient methods, the Company could also elect to raise capital through debt or equity issuances. These alternatives could result in increased interest expense or other dilution of the Company's earnings.

- To better align its resources with its growth strategies and reduce the cost structure of its global operations in certain underlying markets, the Company committed to a significant restructuring plan in fiscal 2018 and recorded $263 million of restructuring and impairment costs in the consolidated statements of income. The restructuring action related to cost reduction initiatives in the Company's Building Technologies & Solutions and Power Solutions businesses and at Corporate. The costs consist primarily of workforce reductions, plant closures and asset impairments. The Company currently estimates that upon completion of the restructuring action, the fiscal 2018 restructuring plan will reduce annual operating costs by approximately $300 million, which is primarily the result of lower cost of sales and SG&A due to reduced employee-related costs, depreciation and amortization expense. The Company expects the annual benefit of these actions will be substantially realized in 2020. For fiscal 2018, the savings, net of execution costs, were approximately 25% of the expected annual operating cost reduction. The restructuring action is expected to be substantially complete in 2020. The restructuring plan reserve balance of $174 million at September 30, 2018 is expected to be paid in cash.

- To better align its resources with its growth strategies and reduce the cost structure of its global operations in certain underlying markets, the Company committed to a significant restructuring plan in fiscal 2017 and recorded $367 million of restructuring and impairment costs in the consolidated statements of income. The restructuring action related to cost reduction initiatives in the Company's Building Technologies & Solutions and Power Solutions businesses and at Corporate. The costs consist primarily of workforce reductions, plant closures and asset impairments. The Company currently estimates that upon completion of the restructuring action, the fiscal 2017 restructuring plan will reduce annual operating costs from continuing operations by approximately $280 million, which is primarily the result of lower cost of sales and SG&A expenses due to reduced employee-related costs, depreciation and amortization expense. The Company expects the annual benefit of these actions will be substantially realized in fiscal 2019. For fiscal 2018, the savings, net of execution costs, were approximately 85% of the expected annual operating cost reduction. The restructuring actions are expected to be substantially complete in fiscal 2019. The restructuring plan reserve balance of $80 million at September 30, 2018 is expected to be paid in cash.

- To better align its resources with its growth strategies and reduce the cost structure of its global operations to address the softness in certain underlying markets, the Company committed to a significant restructuring plan in fiscal 2016 and recorded $288 million of restructuring and impairment costs in the consolidated statements of income. The restructuring action related to cost reduction initiatives in the Company's Building Technologies & Solutions and Power Solutions businesses and at Corporate. The costs consist primarily of workforce reductions, plant closures, asset impairments and change-in-control payments. The Company currently estimates that upon completion of the restructuring action, the fiscal 2016 restructuring plan will reduce annual operating costs from continuing operations by approximately $135 million, which is primarily the result of lower cost of sales and SG&A due to reduced employee-related costs, depreciation and amortization expense. The Company expects the annual benefit of these actions will be substantially realized in fiscal 2019. For fiscal 2018, the savings, net of execution costs, were approximately 75% of the expected annual operating cost reduction. The restructuring actions are expected to be substantially complete in fiscal 2019. The restructuring plan reserve balance of $73 million at September 30, 2018 is expected to be paid in cash.

A summary of the Company's significant contractual obligations for continuing operations as of September 30, 2018 is as follows (in millions):

	Total	2019	2020-2021	2022-2023	2024 and Beyond
Contractual Obligations					
Long-term debt (including capital lease obligations)*	$ 9,724	$ 26	$ 2,489	$ 1,973	$ 5,236
Interest on long-term debt (including capital lease obligations)*	5,399	317	560	476	4,046
Operating leases	1,200	348	492	263	97
Purchase obligations	2,506	1,490	731	262	23
Pension and postretirement contributions	476	100	75	76	225
Tax indemnification liabilities**	255	—	—	—	—
Total contractual cash obligations	$ 19,560	$ 2,281	$ 4,347	$ 3,050	$ 9,627

* Refer to Note 9, "Debt and Financing Arrangements," of the notes to consolidated financial statements for information related to the Company's long-term debt.

** As a result of the Tyco Merger in the fourth quarter of fiscal 2016, the Company recorded as part of the acquired liabilities of Tyco $290 million of post sale contingent tax indemnification liabilities which is generally recorded within other noncurrent liabilities in the consolidated statements of financial position. The liabilities are recorded at fair value and relate to certain tax related matters borne by the buyer of previously divested subsidiaries of Tyco which Tyco has indemnified certain parties and the amounts are probable of being paid. At September 30, 2018 and 2017, the Company recorded liabilities of $255 million and $290 million, respectively. Of the $255 million recorded as of September 30, 2018, $235 million is related to prior divested businesses and the remainder relates to Tyco's tax sharing agreements from its 2007 and 2012 spin-off transactions. The payments due by period are not presented due to uncertainty as to when these liabilities will be settled or paid. These are certain guarantees or indemnifications extended among Tyco, Medtronic, TE Connectivity, ADT and Pentair in accordance with the terms of the 2007 and 2012 separation and tax sharing agreements.

CRITICAL ACCOUNTING ESTIMATES AND POLICIES

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

Revenue Recognition

The Building Technologies & Solutions business recognizes revenue from certain long-term contracts over the contractual period under the percentage-of-completion ("POC") method of accounting. This method of accounting recognizes sales and gross profit as work is performed based on the relationship between actual costs incurred and total estimated costs at completion. Recognized revenues that will not be billed under the terms of the contract until a later date are recorded primarily in accounts receivable. Likewise, contracts where billings to date have exceeded recognized revenues are recorded primarily in deferred revenue. Changes to the original estimates may be required during the life of the contract and such estimates are reviewed monthly. Sales and gross profit are adjusted using the cumulative catch-up method for revisions in estimated total contract costs and contract values. Estimated losses are recorded when identified. Claims against customers are recognized as revenue upon settlement. The use of the POC method of accounting involves considerable use of estimates in determining revenues, costs and profits and in assigning the amounts to accounting periods. The periodic reviews have not resulted in adjustments that were significant to the Company's results of operations. The Company continually evaluates all of the assumptions, risks and uncertainties inherent with the application of the POC method of accounting.

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

The Building Technologies & Solutions business also sells certain heating, ventilating and air conditioning ("HVAC") and refrigeration products and services in bundled arrangements, where multiple products and/or services are involved. Significant deliverables within these arrangements include equipment, commissioning, service labor and extended warranties. Approximately four to twelve months separate the timing of the first deliverable until the last piece of equipment is delivered, and there may be extended warranty arrangements with duration of one to five years commencing upon the end of the standard warranty period. In addition, the Buildings business sells security monitoring systems that may have multiple elements, including equipment, installation, monitoring services and maintenance agreements. Revenues associated with sale of equipment and related installations are recognized once delivery, installation and customer acceptance is completed, while the revenue for monitoring and maintenance services are recognized as services are rendered. In accordance with ASU No. 2009-13, "Revenue Recognition (Topic 605): Multiple-Deliverable Revenue Arrangements - A Consensus of the FASB Emerging Issues Task Force," the Company divides bundled arrangements into separate deliverables and revenue is allocated to each deliverable based on the relative selling price method. In order to estimate relative selling price, market data and transfer price studies are utilized. Revenue recognized for security monitoring equipment and installation is limited to the lesser of their allocated amounts under the estimated selling price hierarchy or the non-contingent up-front consideration received at the time of installation, since collection of future amounts under the arrangement with the customer is contingent upon the delivery of monitoring and maintenance services. For transactions in which the Company retains ownership of the subscriber system asset, fees for monitoring and maintenance services are recognized on a straight-line basis over the contract term. Non-refundable fees received in connection with the initiation of a monitoring contract, along with associated direct and incremental selling costs, are deferred and amortized over the estimated life of the customer relationship.

In all other cases, the Company recognizes revenue at the time title passes to the customer or as services are performed.

Goodwill and Indefinite-Lived Intangible Assets

Goodwill reflects the cost of an acquisition in excess of the fair values assigned to identifiable net assets acquired. The Company reviews goodwill for impairment during the fourth fiscal quarter or more frequently if events or changes in circumstances indicate the asset might be impaired. The Company performs impairment reviews for its reporting units, which have been determined to be the Company's reportable segments or one level below the reportable segments in certain instances, using a fair value method based on management's judgments and assumptions or third party valuations. The fair value of a reporting unit refers to the price that would be received to sell the unit as a whole in an orderly transaction between market participants at the measurement date. In estimating the fair value, the Company uses multiples of earnings based on the average of published multiples of earnings of comparable entities with similar operations and economic characteristics and applies to the Company's average of historical and future financial results. In certain instances, the Company uses discounted cash flow analyses or estimated sales price to further support the fair value estimates. The inputs utilized in the analyses are classified as Level 3 inputs within the fair value hierarchy as defined in ASC 820, "Fair Value Measurement." The estimated fair value is then compared with the carrying amount of the reporting unit, including recorded goodwill. The Company is subject to financial statement risk to the extent that the carrying amount exceeds the estimated fair value. During the fourth quarter of fiscal 2018, the Company changed the date of its annual goodwill impairment test from September 30 to July 31. The change was made to more closely align the impairment testing date with the Company's long-term planning and forecasting process. The change in the annual impairment testing date did not delay, accelerate or avoid an impairment charge. The Company has determined this change in accounting principle is preferable and does not result in adjustments to the Company's financial statements when applied retrospectively. Refer to Note 7, "Goodwill and Other Intangible Assets," of the notes to consolidated financial statements for information regarding the goodwill impairment testing performed in the fourth quarters of fiscal years 2018, 2017 and 2016.

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

Impairment of Long-Lived Assets

The Company reviews long-lived assets, including tangible assets and other intangible assets with definitive lives, for impairment whenever events or changes in circumstances indicate that the asset's carrying amount may not be recoverable. The Company conducts its long-lived asset impairment analyses in accordance with ASC 360-10-15, "Impairment or Disposal of Long-Lived Assets," ASC 350-30, "General Intangibles Other than Goodwill" and ASC 985-20, "Costs of software to be sold, leased, or marketed." ASC 360-10-15 requires the Company to group assets and liabilities at the lowest level for which identifiable cash flows are largely independent of the cash flows of other assets and liabilities and evaluate the asset group against the sum of the undiscounted future cash flows. If the undiscounted cash flows do not indicate the carrying amount of the asset group is recoverable, an impairment charge is measured as the amount by which the carrying amount of the asset group exceeds its fair value based on discounted cash flow analysis or appraisals. ASC 350-30 requires intangible assets acquired in a business combination that are used in research and development activities be considered indefinite lived until the completion or abandonment of the associated research and development efforts. During the period that those assets are considered indefinite lived, they shall not be amortized but shall be tested for impairment annually and more frequently if events or changes in circumstances indicate that it is more likely than not that the asset is impaired. If the carrying amount of an intangible asset exceeds its fair value, an entity shall recognize an impairment loss in an amount equal to that excess. ASC 985-20 requires the unamortized capitalized costs of a computer software product be compared to the net realizable value of that product. The amount by which the unamortized capitalized costs of a computer software product exceed the net realizable value of that asset shall be written off. Refer to Note 17, "Impairment of Long-Lived Assets," of the notes to consolidated financial statements for information regarding the impairment testing performed in fiscal years 2018, 2017 and 2016.

Employee Benefit Plans

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

The Company utilizes a mark-to-market approach for recognizing pension and postretirement benefit expenses, including measuring the market related value of plan assets at fair value and recognizing actuarial gains and losses in the fourth quarter of each fiscal year or at the date of a remeasurement event. Refer to Note 15, "Retirement Plans," of the notes to consolidated financial statements for disclosure of the Company's pension and postretirement benefit plans.

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

The Company considers the expected benefit payments on a plan-by-plan basis when setting assumed discount rates. As a result, the Company uses different discount rates for each plan depending on the plan jurisdiction, the demographics of participants and the expected timing of benefit payments. For the U.S. pension and postretirement plans, the Company uses a discount rate provided by an independent third party calculated based on an appropriate mix of high quality bonds. For the non-U.S. pension and postretirement plans, the Company consistently uses the relevant country specific benchmark indices for determining the various discount rates. The Company's weighted average discount rate on U.S. pension plans was 4.10% and 3.80% at September 30, 2018 and 2017, respectively. The Company's weighted average discount rate on postretirement plans was 3.80% and 3.70% at September 30, 2018 and 2017, respectively. The Company's weighted average discount rate on non-U.S. pension plans was 2.45% and 2.40% at September 30, 2018 and 2017, respectively.

In estimating the expected return on plan assets, the Company considers the historical returns on plan assets, adjusted for forward-looking considerations, inflation assumptions and the impact of the active management of the plans' invested assets. Reflecting the relatively long-term nature of the plans' obligations, approximately 35% of the plans' assets are invested in equity securities and 56% in fixed income securities, with the remainder primarily invested in alternative investments. For the years ending September 30, 2018 and 2017, the Company's expected long-term return on U.S. pension plan assets used to determine net periodic benefit cost was 7.50%. The actual rate of return on U.S. pension plans was below 7.50% in fiscal year 2018 and above 7.50% in fiscal year 2017. For the years ending September 30, 2018 and 2017, the Company's weighted average expected long-term return on non-U.S. pension plan assets was 5.35% and 4.60%, respectively. The actual rate of return on non-U.S. pension plans was below 5.35% in fiscal year 2018 and above 4.60% in fiscal year 2017. For the years ending September 30, 2018 and 2017, the Company's weighted average expected long-term return on postretirement plan assets was 5.65% and 5.60%, respectively. The actual rate of return on postretirement plan assets was below 5.65% in fiscal year 2018 and above 5.60% in fiscal year 2017.

Beginning in fiscal 2019, the Company believes the long-term rate of return will approximate 7.10%, 5.20% and 5.65% for U.S. pension, non-U.S. pension and postretirement plans, respectively. Any differences between actual investment results and the expected long-term asset returns will be reflected in net periodic benefit costs in the fourth quarter of each fiscal year or at the date of a significant remeasurement event. If the Company's actual returns on plan assets are less than the Company's expectations, additional contributions may be required.

In fiscal 2018, total employer contributions to the defined benefit pension plans were $53 million, of which $18 million were voluntary contributions made by the Company. The Company expects to contribute approximately $85 million in cash to its defined benefit pension plans in fiscal 2019. In fiscal 2018, total employer contributions to the postretirement plans were $4 million. The Company expects to contribute approximately $15 million in cash to its postretirement plans in fiscal 2019.

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

Loss Contingencies

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

The Company is subject to laws and regulations relating to protecting the environment. The Company provides for expenses associated with environmental remediation obligations when such amounts are probable and can be reasonably estimated. Refer to Note 22, "Commitments and Contingencies," of the notes to consolidated financial statements.

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

Asbestos-Related Contingencies and Insurance Receivables

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

In connection with the recognition of liabilities for asbestos-related matters, the Company records asbestos-related insurance recoveries that are probable. The Company's estimate of asbestos-related insurance recoveries represents estimated amounts due to the Company for previously paid and settled claims and the probable reimbursements relating to its estimated liability for pending and future claims discounted to present value. In determining the amount of insurance recoverable, the Company considers available insurance, allocation methodologies, solvency and creditworthiness of the insurers. Refer to Note 22, "Commitments and Contingencies," of the notes to consolidated financial statements for a discussion on management's judgments applied in the recognition and measurement of asbestos-related assets and liabilities.

Product Warranties

The Company offers warranties to its customers depending upon the specific product and terms of the customer purchase agreement. A typical warranty program requires that the Company replace defective products within a specified time period from the date of sale. The Company records an estimate of future warranty-related costs based on actual historical return rates and other known factors. Based on analysis of return rates and other factors, the Company’s warranty provisions are adjusted as necessary. At September 30, 2018, the Company had recorded $392 million of warranty reserves for continuing operations, including extended warranties for which deferred revenue is recorded. The Company monitors its warranty activity and adjusts its reserve estimates when it is probable that future warranty costs will be different than those estimates. Refer to Note 21, "Guarantees," of the notes to consolidated financial statements for disclosure of the Company's product warranty liabilities.

Income Taxes

The Company accounts for income taxes in accordance with ASC 740, "Income Taxes." Deferred tax assets and liabilities are recognized for the future tax consequences attributable to differences between financial statement carrying amounts of existing assets and liabilities and their respective tax bases and operating loss and other loss carryforwards. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. The Company records a valuation allowance that primarily represents non-U.S. operating and other loss carryforwards for which realization is uncertain. Management judgment is required in determining the Company’s provision for income taxes, deferred tax assets and liabilities, and the valuation allowance recorded against the Company’s net deferred tax assets. In calculating the provision for income taxes on an interim basis, the Company uses an estimate of the annual effective tax rate based upon the facts and circumstances known at each interim period. On a quarterly basis, the actual effective tax rate is adjusted as appropriate based upon the actual results as compared to those forecasted at the beginning of the fiscal year.

The Company reviews the realizability of its deferred tax asset valuation allowances on a quarterly basis, or whenever events or changes in circumstances indicate that a review is required. In determining the requirement for a valuation allowance, the historical and projected financial results of the legal entity or consolidated group recording the net deferred tax asset are considered, along with any other positive or negative evidence. Since future financial results may differ from previous estimates, periodic adjustments to the Company’s valuation allowances may be necessary. At September 30, 2018, the Company had a valuation allowance of $5.2 billion for continuing operations, of which $4.5 billion relates to net operating loss carryforwards primarily in Australia, Belgium, Brazil, China, France, Luxembourg, Spain, Switzerland and the United Kingdom for which sustainable taxable income has not been demonstrated; and $700 million for other deferred tax assets.

The Company is subject to income taxes in the U.S. and numerous non-U.S. jurisdictions. Judgment is required in determining its worldwide provision for income taxes and recording the related assets and liabilities. In the ordinary course of the Company's business, there are many transactions and calculations where the ultimate tax determination is uncertain. The Company is regularly under audit by tax authorities. At September 30, 2018, the Company had unrecognized tax benefits of $2.4 billion.

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

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

NEW ACCOUNTING PRONOUNCEMENTS

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

RISK MANAGEMENT

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

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

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

The Company selectively uses interest rate swaps to reduce market risk associated with changes in interest rates for its fixed-rate bonds. At September 30, 2018, the Company did not have any outstanding interest rate swaps. The Company assesses retrospective and prospective effectiveness and records any measured ineffectiveness in the consolidated statements of income on a monthly basis.

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

A discussion of the Company's accounting policies for derivative financial instruments is included in Note 1, "Summary of Significant Accounting Policies," of the notes to consolidated financial statements, and further disclosure relating to derivatives and hedging activities is included in Note 10, "Derivative Instruments and Hedging Activities," and Note 11, "Fair Value Measurements," of the notes to consolidated financial statements.

Foreign Exchange

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

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

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

At September 30, 2018 and 2017, the Company estimates that an unfavorable 10% change in the exchange rates would have decreased net unrealized gains by approximately $212 million and $330 million, respectively.

Interest Rates

From time to time, the Company may use interest rate swaps to offset its exposure to interest rate movements. In accordance with ASC 815, these outstanding swaps qualify and are designated as fair value hedges. The Company had no outstanding interest rate swaps at September 30, 2018 and 2017, respectively. A 10% increase in the average cost of the Company's variable rate debt would have resulted in an unfavorable change in pre-tax interest expense of approximately $5 million and $13 million for the year ended September 30, 2018 and 2017, respectively.

Commodities

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

ENVIRONMENTAL, HEALTH AND SAFETY AND OTHER MATTERS

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

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

Refer to Note 22, "Commitments and Contingencies," of the notes to consolidated financial statements for additional information.

QUARTERLY FINANCIAL DATA

(in millions, except per share data) (quarterly amounts unaudited)	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	Full Year
2018					
Net sales	$ 7,435	$ 7,475	$ 8,120	$ 8,370	$ 31,400
Gross profit	2,169	2,220	2,472	2,519	9,380
Net income (1)	271	483	804	825	2,383
Net income attributable to Johnson Controls	230	438	723	771	2,162
Earnings per share (2)					
Basic	0.25	0.47	0.78	0.83	2.34
Diluted	0.25	0.47	0.78	0.83	2.32
2017					
Net sales	$ 7,086	$ 7,267	$ 7,683	$ 8,136	$ 30,172
Gross profit	2,114	2,281	2,431	2,513	9,339
Net income (loss) (3)	378	(115)	629	927	1,819
Net income (loss) attributable to Johnson Controls	329	(148)	555	875	1,611
Earnings (loss) per share (2)					
Basic	0.35	(0.16)	0.59	0.94	1.72
Diluted	0.35	(0.16)	0.59	0.93	1.71

(1) The fiscal 2018 first quarter net income includes a $114 million gain on sale of Scott Safety, $158 million of significant restructuring and impairment costs, and $50 million of transaction and integration costs. The fiscal 2018 second quarter net income includes $64 million of transaction and integration costs. The fiscal 2018 third quarter net income includes $51 million of transaction and integration costs. The fiscal 2018 fourth quarter net income includes $10 million of net mark-to-market gains on pension and postretirement plans, $105 million of significant restructuring and impairment costs, and $69 million of transaction and integration costs. The preceding amounts are stated on a pre-tax and pre-noncontrolling interest impact basis.

(2) Due to the use of the weighted-average shares outstanding for each quarter for computing earnings per share, the sum of the quarterly per share amounts may not equal the per share amount for the year.

(3) The fiscal 2017 first quarter net income includes $117 million of mark-to-market gains on pension plans, $78 million of significant restructuring and impairment costs, and $213 million of transaction, integration and separation costs. The fiscal 2017 second quarter net loss includes $18 million of mark-to-market gains on pension plans, $99 million of significant restructuring and impairment costs, and $138 million of transaction and integration costs. The fiscal 2017 third quarter net income includes $45 million of mark-to-market losses on pension plans, $49 million of significant restructuring and impairment costs, and $70 million of transaction and integration costs The fiscal 2017 fourth quarter net income includes $330 million of net mark-to-market gains on pension and postretirement plans, $141 million of significant restructuring and impairment costs, $90 million of integration costs and $50 million for an unfavorable arbitration award. The preceding amounts are stated on a pre-tax and pre-noncontrolling interest impact basis and include both continuing and discontinued operations activity.

ITEM 7A QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

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

ITEM 8 FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

Index to Consolidated Financial Statements

Report of Independent Registered Public Accounting Firm

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

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated statements of financial position of Johnson Controls International plc and its subsidiaries (the "Company") as of September 30, 2018 and 2017, and the related consolidated statements of income, comprehensive income (loss), shareholders' equity attributable to Johnson Controls ordinary shareholders, and cash flows for each of the three years in the period ended September 30, 2018, including the related notes and financial statement schedule listed in the accompanying index (collectively referred to as the "consolidated financial statements"). We also have audited the Company's internal control over financial reporting as of September 30, 2018, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of September 30, 2018 and 2017, and the results of their operations and their cash flows for each of the three years in the period ended September 30, 2018 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of September 30, 2018, 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
Milwaukee, Wisconsin
November 20, 2018

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

Johnson Controls International plc
Consolidated Statements of Income

(in millions, except per share data)	Year Ended September 30, 2018	2017	2016
Net sales			
Products and systems*	$ 25,332	$ 24,099	$ 18,084
Services*	6,068	6,073	2,753
	31,400	30,172	20,837
Cost of sales			
Products and systems*	18,602	17,220	13,323
Services*	3,418	3,613	1,860
	22,020	20,833	15,183
Gross profit	9,380	9,339	5,654
Selling, general and administrative expenses	(6,010)	(6,158)	(4,190)
Restructuring and impairment costs	(263)	(367)	(288)
Net financing charges	(441)	(496)	(289)
Equity income	235	240	174
Income from continuing operations before income taxes	2,901	2,558	1,061
Income tax provision	518	705	197
Income from continuing operations	2,383	1,853	864
Loss from discontinued operations, net of tax (Note 4)	—	(34)	(1,516)
Net income (loss)	2,383	1,819	(652)
Income from continuing operations attributable to noncontrolling interests	221	199	132
Income from discontinued operations attributable to noncontrolling interests	—	9	84
Net income (loss) attributable to Johnson Controls	$ 2,162	$ 1,611	$ (868)
Amounts attributable to Johnson Controls ordinary shareholders:			
Income from continuing operations	$ 2,162	$ 1,654	$ 732
Loss from discontinued operations	—	(43)	(1,600)
Net income (loss)	$ 2,162	$ 1,611	$ (868)
Basic earnings (loss) per share attributable to Johnson Controls			
Continuing operations	$ 2.34	$ 1.77	$ 1.10
Discontinued operations	—	(0.05)	(2.40)
Net income (loss)	$ 2.34	$ 1.72	$ (1.30)
Diluted earnings (loss) per share attributable to Johnson Controls			
Continuing operations	$ 2.32	$ 1.75	$ 1.09
Discontinued operations	—	(0.05)	(2.38)
Net income (loss) **	$ 2.32	$ 1.71	$ (1.29)

* Products and systems consist of Building Technologies & Solutions and Power Solutions products and systems. Services are Building Technologies & Solutions technical services.

** Certain items do not sum due to rounding.

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

Johnson Controls International plc
Consolidated Statements of Comprehensive Income (Loss)

(in millions)	**Year Ended September 30,** 2018	2017	2016
Net income (loss)	$ 2,383	$ 1,819	$ (652)
Other comprehensive income (loss), net of tax:			
Foreign currency translation adjustments	(483)	103	(94)
Realized and unrealized gains (losses) on derivatives	(29)	(14)	9
Realized and unrealized gains (losses) on marketable securities	4	5	(1)
Pension and postretirement plans	—	—	(1)
Other comprehensive income (loss)	(508)	94	(87)
Total comprehensive income (loss)	1,875	1,913	(739)
Comprehensive income attributable to noncontrolling interests	186	203	225
Comprehensive income (loss) attributable to Johnson Controls	$ 1,689	$ 1,710	$ (964)

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

Johnson Controls International plc
Consolidated Statements of Financial Position

	September 30,	
(in millions, except par value and share data)	**2018**	**2017**
Assets		
Cash and cash equivalents	$ 200	$ 321
Accounts receivable, less allowance for doubtful accounts of $177 and $182, respectively	7,065	6,666
Inventories	3,224	3,209
Assets held for sale	—	189
Other current assets	1,334	1,907
Current assets	11,823	12,292
Property, plant and equipment - net	6,171	6,121
Goodwill	19,473	19,688
Other intangible assets - net	6,348	6,741
Investments in partially-owned affiliates	1,301	1,191
Noncurrent assets held for sale	—	1,920
Other noncurrent assets	3,681	3,931
Total assets	$ 48,797	$ 51,884
Liabilities and Equity		
Short-term debt	$ 1,315	$ 1,214
Current portion of long-term debt	26	394
Accounts payable	4,644	4,271
Accrued compensation and benefits	1,146	1,071
Deferred revenue	1,326	1,279
Liabilities held for sale	—	72
Other current liabilities	2,793	3,553
Current liabilities	11,250	11,854
Long-term debt	9,654	11,964
Pension and postretirement benefits	717	947
Noncurrent liabilities held for sale	—	173
Other noncurrent liabilities	4,718	5,368
Long-term liabilities	15,089	18,452
Commitments and contingencies (Note 22)		
Redeemable noncontrolling interests	—	211
Ordinary shares - par value $0.01, $0.01; 2.0 billion, 2.0 billion shares authorized; 950,969,965, 945,055,276 shares issued, respectively	10	9
Ordinary A shares - par value €1.00; 40,000 shares authorized, none outstanding as of September 30, 2018 and 2017	—	—
Preferred shares - par value $0.01; 200,000,000 shares authorized, none outstanding as of September 30, 2018 and 2017	—	—
Ordinary shares held in treasury, at cost (2018 - 25,963,004; 2017 - 17,080,302 shares)	(1,053)	(710)
Capital in excess of par value	16,549	16,390
Retained earnings	6,604	5,231
Accumulated other comprehensive loss	(946)	(473)
Shareholders' equity attributable to Johnson Controls	21,164	20,447
Noncontrolling interests	1,294	920
Total equity	22,458	21,367
Total liabilities and equity	$ 48,797	$ 51,884

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

Johnson Controls International plc
Consolidated Statements of Cash Flows

(in millions)	Year Ended September 30, 2018	2017	2016
Operating Activities			
Net income (loss) attributable to Johnson Controls	$ 2,162	$ 1,611	$ (868)
Income from continuing operations attributable to noncontrolling interests	221	199	132
Income from discontinued operations attributable to noncontrolling interests	—	9	84
Net income (loss)	2,383	1,819	(652)
Adjustments to reconcile net income (loss) to cash provided by operating activities:			
Depreciation and amortization	1,085	1,188	953
Pension and postretirement benefit expense (income)	(156)	(568)	460
Pension and postretirement contributions	(57)	(347)	(137)
Equity in earnings of partially-owned affiliates, net of dividends received	(166)	(181)	(250)
Deferred income taxes	(636)	1,125	(1,241)
Non-cash restructuring and impairment charges	42	78	221
Gain on Scott Safety business divestiture	(114)	—	—
Equity-based compensation	115	147	142
Other - net	(48)	(12)	(25)
Changes in assets and liabilities, excluding acquisitions and divestitures:			
Accounts receivable	(513)	(520)	(344)
Inventories	(92)	(398)	1
Other assets	26	(480)	148
Restructuring reserves	(8)	89	141
Accounts payable and accrued liabilities	15	236	411
Accrued income taxes	637	(2,145)	2,080
Cash provided by operating activities	2,513	31	1,908
Investing Activities			
Capital expenditures	(1,030)	(1,343)	(1,249)
Sale of property, plant and equipment	48	33	32
Acquisition of businesses, net of cash acquired	(21)	(6)	353
Business divestitures, net of cash divested	2,202	220	32
Changes in long-term investments	11	(41)	(48)
Other - net	5	—	(7)
Cash provided (used) by investing activities	1,215	(1,137)	(887)
Financing Activities			
Increase in short-term debt - net	107	145	556
Increase in long-term debt	1,136	1,865	1,501
Repayment of long-term debt	(3,729)	(1,297)	(1,299)
Debt financing costs	(4)	(18)	(45)
Stock repurchases	(300)	(651)	(501)
Payment of cash dividends	(954)	(702)	(915)
Proceeds from the exercise of stock options	66	157	70
Dividends paid to noncontrolling interests	(46)	(88)	(306)
Dividend from Adient spin-off	—	2,050	—
Cash transferred to Adient related to spin-off	—	(665)	—
Cash paid to prior acquisitions	—	(75)	—
Employee equity-based compensation withholding	(43)	(37)	(5)
Other - net	15	14	(2)
Cash provided (used) by financing activities	(3,752)	698	(946)
Effect of exchange rate changes on cash and cash equivalents	(106)	54	12
Change in cash held for sale	9	96	(61)
Increase (decrease) in cash and cash equivalents	(121)	(258)	26
Cash and cash equivalents at beginning of period	321	579	553
Cash and cash equivalents at end of period	$ 200	$ 321	$ 579

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

Johnson Controls International plc
Consolidated Statements of Shareholders' Equity Attributable to Johnson Controls Ordinary Shareholders

(in millions, except per share data)	Total	Ordinary Shares	Capital in Excess of Par Value	Retained Earnings	Treasury Stock, at Cost	Accumulated Other Comprehensive Income (Loss)
At September 30, 2015	$ 10,335	$ 7	$ 3,740	$ 10,797	$ (3,152)	$ (1,057)
Comprehensive loss	(964)	—	—	(868)	—	(96)
Result of contribution of Johnson Controls, Inc. to Johnson Controls International plc	15,808	2	12,157	—	3,649	—
Cash dividends						
Common ($1.16 per share)	(752)	—	—	(752)	—	—
Repurchases of common stock	(501)	—	—	—	(501)	—
Other, including options exercised	192	—	208	—	(16)	—
At September 30, 2016	24,118	9	16,105	9,177	(20)	(1,153)
Comprehensive income	1,710	—	—	1,611	—	99
Cash dividends						
Ordinary ($1.00 per share)	(938)	—	—	(938)	—	—
Repurchases of ordinary shares	(651)	—	—	—	(651)	—
Spin-off of Adient	(4,038)	—	—	(4,619)	—	581
Other, including options exercised	246	—	285	—	(39)	—
At September 30, 2017	20,447	9	16,390	5,231	(710)	(473)
Comprehensive income (loss)	1,689	—	—	2,162	—	(473)
Cash dividends						
Ordinary ($1.04 per share)	(968)	—	—	(968)	—	—
Repurchases of ordinary shares	(300)	—	—	—	(300)	—
Adoption of ASU 2016-09	179	—	—	179	—	—
Other, including options exercised	117	1	159	—	(43)	—
At September 30, 2018	**$ 21,164**	**$ 10**	**$ 16,549**	**$ 6,604**	**$ (1,053)**	**$ (946)**

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

1. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

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

Nature of Operations

Johnson Controls International plc, headquartered in Cork, Ireland, is a global diversified technology and multi industrial leader serving a wide range of customers in more than 150 countries. The Company creates intelligent buildings, efficient energy solutions, integrated infrastructure and next generation transportation systems that work seamlessly together to deliver on the promise of smart cities and communities. The Company is committed to helping our customers win and creating greater value for all of its stakeholders through strategic focus on our buildings and energy growth platforms.

In the fourth quarter of fiscal 2016, Johnson Controls, Inc. ("JCI Inc.") and Tyco International plc ("Tyco") completed their combination with JCI Inc. merging with a wholly-owned, indirect subsidiary of Tyco (the "Merger"). Following the Merger, Tyco changed its name to “Johnson Controls International plc” and JCI Inc. is a wholly-owned subsidiary of Johnson Controls International plc. The Merger was accounted for as a reverse acquisition using the acquisition method of accounting in accordance with Accounting Standards Codification ("ASC") 805, "Business Combinations." JCI Inc. was the accounting acquirer for financial reporting purposes. Accordingly, the historical consolidated financial statements of JCI Inc. for periods prior to this transaction are considered to be the historic financial statements of the Company.

On October 31, 2016, the Company completed the spin-off of its Automotive Experience business by way of the transfer of the Automotive Experience Business from Johnson Controls to Adient plc and the issuance of ordinary shares of Adient directly to holders of Johnson Controls ordinary shares on a pro rata basis. Prior to the open of business on October 31, 2016, each of the Company's shareholders received one ordinary share of Adient plc for every ten ordinary shares of Johnson Controls held as of the close of business on October 19, 2016, the record date for the distribution. Company shareholders received cash in lieu of fractional shares of Adient, if any. Following the separation and distribution, Adient plc is now an independent public company trading on the New York Stock Exchange ("NYSE") under the symbol "ADNT." The Company did not retain any equity interest in Adient plc. Adient’s historical financial results are reflected in the Company’s consolidated financial statements as a discontinued operation. Refer to Note 4, "Discontinued Operations," of the notes to consolidated financial statements for further information.

The Building Technologies & Solutions ("Buildings") business is a global market leader in engineering, developing, manufacturing and installing building products and systems around the world, including heating, ventilating, air-conditioning ("HVAC") equipment, HVAC controls, energy-management systems, security systems, fire detection systems and fire suppression solutions. The Buildings business further serves customers by providing technical services (in the HVAC, security and fire-protection space), energy-management consulting and data-driven solutions via its data-enabled business. Finally, the Company has a strong presence in the North American residential air conditioning and heating systems market and is a global market leader in industrial refrigeration products.

The Power Solutions business is a leading global supplier of lead-acid automotive batteries for virtually every type of passenger car, light truck and utility vehicle. The Company serves both automotive original equipment manufacturers and the general vehicle battery aftermarket. The Company also supplies advanced battery technologies to power start-stop, hybrid and electric vehicles.

Principles of Consolidation

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

Under certain criteria as provided for in Financial Accounting Standards Board ("FASB") ASC 810, "Consolidation," the Company may consolidate a partially-owned affiliate. To determine whether to consolidate a partially-owned affiliate, the Company first determines if the entity is a variable interest entity ("VIE"). An entity is considered to be a VIE if it has one of the following characteristics: 1) the entity is thinly capitalized; 2) residual equity holders do not control the entity; 3) equity holders are shielded from economic losses or do not participate fully in the entity's residual economics; or 4) the entity was established with non-substantive voting. If the entity meets one of these characteristics, the Company then determines if it is the primary beneficiary of the VIE. The party with the power to direct activities of the VIE that most significantly impact the VIE's economic performance and the potential to absorb benefits or losses that could be significant to the VIE is considered the primary beneficiary and consolidates the VIE. If the entity is not considered a VIE, then the Company applies the voting interest model to determine whether or not the Company shall consolidate the partially-owned affiliate.

Consolidated VIEs

Based upon the criteria set forth in ASC 810, the Company has determined that it was not the primary beneficiary in any VIEs for the reporting period ended September 30, 2018 and that it was the primary beneficiary in one VIE for the reporting period ended September 30, 2017, as the Company absorbed significant economics of the entity and had the power to direct the activities that are considered most significant to the entity.

In fiscal 2012, a pre-existing VIE accounted for under the equity method was reorganized into three separate investments as a result of the counterparty exercising its option to put its interest to the Company. The Company acquired additional interests in two of the reorganized group entities. The reorganized group entities are considered to be VIEs as the other owner party has been provided decision making rights but does not have equity at risk. The Company was considered the primary beneficiary of one of the entities due to the Company's power pertaining to decisions over significant activities of the entity. As such, this VIE was consolidated within the Company's consolidated statements of financial position as of September 30, 2017. During the fiscal year ended September 30, 2018, certain joint venture agreements were amended and, as a result, the Company can no longer make key operating decisions considered to be most significant to the VIE. As such, the Company is no longer considered the primary beneficiary of this entity, and the Company deconsolidated the entity during the fiscal year ended September 30, 2018. The impact of the entity on the Company's consolidated statements of income for the years ended September 30, 2018, 2017 and 2016 was not material.

The carrying amounts and classification of assets (none of which are restricted) and liabilities included in the Company's consolidated statements of financial position for the consolidated VIE is as follows (in millions):

	September 30, 2017
Current assets	$ 2
Noncurrent assets	53
Total assets	$ 55
Current liabilities	$ 6
Noncurrent liabilities	42
Total liabilities	$ 48

The Company did not have a significant variable interest in any other consolidated VIEs for the presented reporting periods.

Nonconsolidated VIEs

As mentioned previously within the "Consolidated VIEs" section above, in fiscal 2012, a pre-existing VIE was reorganized into three separate investments as a result of the counterparty exercising its option to put its interest to the Company. The reorganized group entities are considered to be VIEs as the other owner party has been provided decision making rights but does not have equity at risk. The VIEs are named as co-obligors under a third party debt agreement in the amount of $155 million, maturing in fiscal 2020, under which a VIE could become subject to paying more than its allocated share of the third party debt in the event of bankruptcy of one or more of the other co-obligors. The other co-obligors, all related parties in which the Company is an equity investor, consist of the remaining group entities involved in the reorganization. As part of the overall reorganization transaction, the Company has also provided financial support to the group entities in the form of loans totaling $38 million, which are subordinate to the third party debt agreement. The Company is a significant customer of certain co-obligors, resulting in a remote possibility of loss. Additionally, the Company is subject to a floor guaranty expiring in fiscal 2022; in the event that the other owner party no longer owns any part of the group entities due to sale or transfer, the Company has guaranteed that the proceeds received from the sale or transfer will not be less than $25 million. The Company has partnered with the group entities to design and manufacture battery components for the Power Solutions business. The Company is not considered to be the primary beneficiary of three of the entities as of September 30, 2018 and two of the entities as of September 30, 2017, as the Company cannot make key operating decisions considered to be most significant to the VIEs. Therefore, the entities are accounted for under the equity method of accounting as the Company's interest exceeds 20% and the Company does not have a controlling interest. The Company's maximum exposure to loss includes the partially-owned affiliate investment balance of $43 million and $65 million at September 30, 2018 and 2017, respectively, as well as the subordinated loan from the Company, third party debt agreement and floor guaranty mentioned above. Current liabilities due to the VIEs are not material and represent normal course of business trade payables for all presented periods.

The Company did not have a significant variable interest in any other nonconsolidated VIEs for the presented reporting periods.

Use of Estimates

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

Fair Value of Financial Instruments

The fair values of cash and cash equivalents, accounts receivable, short-term debt and accounts payable approximate their carrying values. See Note 10, "Derivative Instruments and Hedging Activities," and Note 11, "Fair Value Measurements," of the notes to consolidated financial statements for fair value of financial instruments, including derivative instruments, hedging activities and long-term debt.

Assets and Liabilities Held for Sale

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

In addition, the Company classifies disposal groups to be disposed of other than by sale (e.g. spin-off) as held for sale in the period the disposal occurs.

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

Upon determining that a disposal group meets the criteria to be classified as held for sale, the Company reports the assets and liabilities of the disposal group, if material, in the line items assets held for sale and liabilities held for sale in the consolidated statements of financial position. Refer to Note 4, "Discontinued Operations," of the notes to consolidated financial statements for further information.

Cash and Cash Equivalents

The Company considers all highly liquid investments with an original maturity of three months or less when purchased to be cash equivalents.

Restricted Cash

At September 30, 2018, the Company held restricted cash of approximately $15 million, of which $6 million was recorded within other current assets in the consolidated statements of financial position and $9 million was recorded within other noncurrent assets in the consolidated statements of financial position. At September 30, 2017, the Company held restricted cash of approximately $31 million, of which $22 million was recorded within other current assets in the consolidated statements of financial position and $9 million was recorded within other noncurrent assets in the consolidated statements of financial position.

Receivables

Receivables consist of amounts billed and currently due from customers and unbilled costs and accrued profits related to revenues on long-term contracts that have been recognized for accounting purposes but not yet billed to customers. The Company extends credit to customers in the normal course of business and maintains an allowance for doubtful accounts resulting from the inability or unwillingness of customers to make required payments. The allowance for doubtful accounts is based on historical experience, existing economic conditions and any specific customer collection issues the Company has identified. The Company enters into supply chain financing programs to sell certain accounts receivable without recourse to third-party financial institutions. Sales of accounts receivable are reflected as a reduction of accounts receivable on the consolidated statements of financial position and the proceeds are included in cash flows from operating activities in the consolidated statements of cash flows.

Inventories

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

Property, Plant and Equipment

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

Goodwill and Indefinite-Lived Intangible Assets

Goodwill reflects the cost of an acquisition in excess of the fair values assigned to identifiable net assets acquired. The Company reviews goodwill for impairment during the fourth fiscal quarter or more frequently if events or changes in circumstances indicate the asset might be impaired. The Company performs impairment reviews for its reporting units, which have been determined to be the Company's reportable segments or one level below the reportable segments in certain instances, using a fair value method based on management's judgments and assumptions or third party valuations. The fair value of a reporting unit refers to the price that would be received to sell the unit as a whole in an orderly transaction between market participants at the measurement date. In estimating the fair value, the Company uses multiples of earnings based on the average of published multiples of earnings of comparable entities with similar operations and economic characteristics and applies to the Company's average of historical and future financial results. In certain instances, the Company uses discounted cash flow analyses or estimated sales price to further support the fair value estimates. The inputs utilized in the analyses are classified as Level 3 inputs within the fair value hierarchy as defined in ASC 820, "Fair Value Measurement." The estimated fair value is then compared with the carrying amount of the reporting unit, including recorded goodwill. The Company is subject to financial statement risk to the extent that the carrying amount exceeds the estimated fair value. During the fourth quarter of fiscal 2018, the Company changed the date of its annual goodwill impairment test from September 30 to July 31. The change was made to more closely align the impairment testing date with the Company's long-term planning and forecasting process. The change in the annual impairment testing date did not delay, accelerate or avoid an impairment charge. The Company has determined this change in accounting principle is preferable and does not result in adjustments to the Company's financial statements when applied retrospectively. Refer to Note 7, "Goodwill and Other Intangible Assets," of the notes to consolidated financial statements for information regarding the goodwill impairment testing performed in the fourth quarters of fiscal years 2018, 2017 and 2016.

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

Impairment of Long-Lived Assets

The Company reviews long-lived assets, including tangible assets and other intangible assets with definitive lives, for impairment whenever events or changes in circumstances indicate that the asset's carrying amount may not be recoverable. The Company conducts its long-lived asset impairment analyses in accordance with ASC 360-10-15, "Impairment or Disposal of Long-Lived Assets," ASC 350-30, "General Intangibles Other than Goodwill" and ASC 985-20, "Costs of software to be sold, leased, or marketed." ASC 360-10-15 requires the Company to group assets and liabilities at the lowest level for which identifiable cash flows are largely independent of the cash flows of other assets and liabilities and evaluate the asset group against the sum of the undiscounted future cash flows. If the undiscounted cash flows do not indicate the carrying amount of the asset group is recoverable, an impairment charge is measured as the amount by which the carrying amount of the asset group exceeds its fair value based on discounted cash flow analysis or appraisals. ASC 350-30 requires intangible assets acquired in a business combination that are used in research and development activities to be considered indefinite lived until the completion or abandonment of the associated research and development efforts. During the period that those assets are considered indefinite lived, they shall not be amortized but shall be tested for impairment annually and more frequently if events or changes in circumstances indicate that it is more likely than not that the asset is impaired. If the carrying amount of an intangible asset exceeds its fair value, an entity shall recognize an impairment loss in an amount equal to that excess. ASC 985-20 requires the unamortized capitalized costs of a computer software product be compared to the net realizable value of that product. The amount by which the unamortized capitalized costs of a computer software product exceed the net realizable value of that asset shall be written off. Refer to Note 17, "Impairment of Long-Lived Assets," of the notes to consolidated financial statements for information regarding the impairment testing performed in fiscal years 2018, 2017 and 2016.

Revenue Recognition

The Building Technologies & Solutions business recognizes revenue from certain long-term contracts over the contractual period under the percentage-of-completion ("POC") method of accounting. This method of accounting recognizes sales and gross profit as work is performed based on the relationship between actual costs incurred and total estimated costs at completion. Recognized revenues that will not be billed under the terms of the contract until a later date are recorded primarily in accounts receivable. Likewise, contracts where billings to date have exceeded recognized revenues are recorded primarily in deferred revenue. Costs and earnings in excess of billings related to these contracts were $1,054 million and $908 million at September 30, 2018 and 2017, respectively. Billings in excess of costs and earnings related to these contracts were $535 million and $451 million at September 30, 2018 and 2017, respectively. Changes to the original estimates may be required during the life of the contract and such estimates are reviewed monthly. Sales and gross profit are adjusted using the cumulative catch-up method for revisions in estimated total contract costs and contract values. Estimated contract losses are recorded when identified. Claims against customers are recognized as revenue upon settlement. The use of the POC method of accounting involves considerable use of estimates in determining revenues, costs and profits and in assigning the amounts to accounting periods. The periodic reviews have not resulted in adjustments that were significant to the Company's results of operations. The Company continually evaluates all of the assumptions, risks and uncertainties inherent with the application of the POC method of accounting.

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

The Building Technologies & Solutions business also sells certain HVAC and refrigeration products and services in bundled arrangements, where multiple products and/or services are involved. Significant deliverables within these arrangements include equipment, commissioning, service labor and extended warranties. Approximately four to twelve months separate the timing of the first deliverable until the last piece of equipment is delivered, and there may be extended warranty arrangements with duration of one to five years commencing upon the end of the standard warranty period. In addition, the Building Technologies & Solutions business sells security monitoring systems that may have multiple elements, including equipment, installation, monitoring services and maintenance agreements. Revenues associated with sale of equipment and related installations are recognized once delivery, installation and customer acceptance is completed, while the revenue for monitoring and maintenance services are recognized as services are rendered. In accordance with Accounting Standards Update ("ASU") No. 2009-13, "Revenue Recognition (Topic 605): Multiple-Deliverable Revenue Arrangements - A Consensus of the FASB Emerging Issues Task Force," the Company divides bundled arrangements into separate deliverables and revenue is allocated to each deliverable based on the relative selling price method. In order to estimate relative selling price, market data and transfer price studies are utilized. Revenue recognized for security monitoring equipment and installation is limited to the lesser of their allocated amounts under the estimated selling price hierarchy or the non-contingent up-front consideration received at the time of installation, since collection of future amounts under the arrangement with the customer is contingent upon the delivery of monitoring and maintenance services. For transactions in which the Company retains ownership of the subscriber system asset, fees for monitoring and maintenance services are recognized on a straight-line basis over the contract term. Non-refundable fees received in connection with the initiation of a monitoring contract, along with associated direct and incremental selling costs, are deferred and amortized over the estimated life of the customer relationship.

In all other cases, the Company recognizes revenue at the time title passes to the customer or as services are performed.

Subscriber System Assets, Dealer Intangibles and Related Deferred Revenue Accounts

The Building Technologies & Solutions business considers assets related to the acquisition of new customers in its electronic security business in three asset categories: internally generated residential subscriber systems outside of North America, internally generated commercial subscriber systems (collectively referred to as subscriber system assets) and customer accounts acquired through the ADT dealer program, primarily outside of North America (referred to as dealer intangibles). Subscriber system assets include installed property, plant and equipment for which the Company retains ownership and deferred costs directly related to the customer acquisition and system installation. Subscriber system assets represent capitalized equipment (e.g. security control panels, touchpad, motion detectors, window sensors, and other equipment) and installation costs associated with electronic security monitoring arrangements under which the Company retains ownership of the security system assets in a customer's place of business, or outside of North America, residence. Installation costs represent costs incurred to prepare the asset for its intended use. The Company pays property taxes on the subscriber system assets and upon customer termination, may retrieve such assets. These assets embody a probable future economic benefit as they generate future monitoring revenue for the Company.

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

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

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

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

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

Research and Development Costs

Expenditures for research activities relating to product development and improvement are charged against income as incurred and included within selling, general and administrative expenses for continuing operations in the consolidated statements of income. Such expenditures for the years ended September 30, 2018, 2017 and 2016 were $380 million, $360 million and $158 million, respectively.

Earnings Per Share

The Company presents both basic and diluted earnings per share ("EPS") amounts. Basic EPS is calculated by dividing net income attributable to Johnson Controls by the weighted average number of common shares outstanding during the reporting period.

Diluted EPS is calculated by dividing net income attributable to Johnson Controls by the weighted average number of common shares and common equivalent shares outstanding during the reporting period that are calculated using the treasury stock method for stock options, unvested restricted stock and unvested performance share awards. See Note 13, "Earnings per Share," of the notes to consolidated financial statements for the calculation of earnings per share.

Foreign Currency Translation

Substantially all of the Company's international operations use the respective local currency as the functional currency. Assets and liabilities of international entities have been translated at period-end exchange rates, and income and expenses have been translated using average exchange rates for the period. Monetary assets and liabilities denominated in non-functional currencies are adjusted to reflect period-end exchange rates. The aggregate transaction gains (losses), net of the impact of foreign currency hedges, included in net income for the years ended September 30, 2018, 2017 and 2016 were $(5) million, $94 million and $(95) million, respectively.

Derivative Financial Instruments

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

The fair values of all derivatives are recorded in the consolidated statements of financial position. The change in a derivative's fair value is recorded each period in current earnings or accumulated other comprehensive income ("AOCI"), depending on whether the derivative is designated as part of a hedge transaction and if so, the type of hedge transaction. See Note 10, "Derivative Instruments and Hedging Activities," and Note 11, "Fair Value Measurements," of the notes to consolidated financial statements for disclosure of the Company's derivative instruments and hedging activities.

Investments

The Company invests in debt and equity securities which are classified as available for sale and are marked to market at the end of each accounting period. Unrealized gains and losses on these securities, other than the deferred compensation plan assets, are recognized in AOCI within the consolidated statement of shareholders' equity unless an unrealized loss is deemed to be other than temporary, in which case such loss is charged to earnings. The deferred compensation plan assets are marked to market at the end of each accounting period and all unrealized gains and losses are recorded in the consolidated statements of income.

Pension and Postretirement Benefits

The Company utilizes a mark-to-market approach for recognizing pension and postretirement benefit expenses, including measuring the market related value of plan assets at fair value and recognizing actuarial gains and losses in the fourth quarter of each fiscal year or at the date of a remeasurement event. Refer to Note 15, "Retirement Plans," of the notes to consolidated financial statements for disclosure of the Company's pension and postretirement benefit plans.

Loss Contingencies

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

The Company is subject to laws and regulations relating to protecting the environment. The Company provides for expenses associated with environmental remediation obligations when such amounts are probable and can be reasonably estimated. Refer to Note 22, "Commitments and Contingencies," of the notes to consolidated financial statements.

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

Asbestos-Related Contingencies and Insurance Receivables

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

In connection with the recognition of liabilities for asbestos-related matters, the Company records asbestos-related insurance recoveries that are probable. The Company's estimate of asbestos-related insurance recoveries represents estimated amounts due to the Company for previously paid and settled claims and the probable reimbursements relating to its estimated liability for pending and future claims discounted to present value. In determining the amount of insurance recoverable, the Company considers available insurance, allocation methodologies, solvency and creditworthiness of the insurers. Refer to Note 22, "Commitments and Contingencies," of the notes to consolidated financial statements for a discussion on management's judgments applied in the recognition and measurement of asbestos-related assets and liabilities.

Income Taxes

Deferred tax liabilities and assets are recognized for the expected future tax consequences of events that have been reflected in the consolidated financial statements. Deferred tax liabilities and assets are determined based on the differences between the book and tax basis of particular assets and liabilities and operating loss carryforwards, using tax rates in effect for the years in which the differences are expected to reverse. A valuation allowance is provided to reduce the carrying or book value of deferred tax assets if, based upon the available evidence, including consideration of tax planning strategies, it is more-likely-than-not that some or all of the deferred tax assets will not be realized. Refer to Note 18, "Income Taxes," of the notes to consolidated financial statements.

Retrospective Changes

Certain amounts as of September 30, 2017 and 2016 have been revised to conform to the current year's presentation.

In March 2016, the FASB issued Accounting Standards Update ("ASU") No. 2016-09, "Compensation - Stock Compensation (Topic 718): Improvements to Employee Share-Based Payment Accounting." ASU No. 2016-09 impacts certain aspects of the accounting for share-based payment transactions, including income tax consequences, classification of awards as either equity or liabilities, and classification on the statements of cash flows. During the quarter ended December 31, 2017, the Company adopted ASU No. 2016-09. As a result, the Company recognized deferred tax assets of $179 million in the consolidated statements of financial position related to certain operating loss carryforwards resulting from the exercise of employee stock options and vested restricted stock on a modified retrospective basis through a cumulative-effect adjustment to retained earnings as of October 1, 2017. Additionally, employee withholding taxes paid to taxing authorities for equity-based compensation transactions, previously classified as cash flows from operating activities, were reclassified to financing activities in the consolidated statements of cash flows for the fiscal years ended September 30, 2017 and 2016 for comparative purposes. The remaining provisions of ASU No. 2016-09 did not have a material impact on the Company's consolidated financial statements.

New Accounting Pronouncements

Recently Adopted Accounting Pronouncements

On August 17, 2018, the U.S. Securities and Exchange Commission ("SEC") issued the final rule under SEC Release No. 33-10532, "Disclosure Update and Simplification," that amends certain of its disclosure requirements that have become redundant, duplicative, overlapping, outdated or superseded. The amendments include removing the requirement to disclose the historical and pro forma ratio of earnings to fixed charges (Exhibit 12) and replacing the requirement to disclose the high and low trading prices of entity's ordinary shares with a requirement to disclose the ticker symbol of its shares. Additionally, the final rule extends to interim periods the annual disclosure requirement of presenting changes in each caption of stockholders' equity and the amount of dividends per share. These disclosures are required to be provided for the current and comparative year-to-date interim periods. The final rule is effective for all filings on or after November 5, 2018. The Company has adopted all relevant disclosure requirements for its annual report on Form 10-K for the year ended September 30, 2018.

In March 2018, the FASB issued ASU No. 2018-05, "Income Taxes (Topic 740): Amendments to SEC Paragraphs Pursuant to SEC Staff Accounting Bulletin No. 118," to add various SEC paragraphs pursuant to the issuance of SEC Staff Accounting Bulletin No. 118 ("SAB 118") to ASC 740 "Income Taxes." SAB 118 was issued by the SEC in December 2017 to provide immediate guidance for accounting implications of U.S. Tax Reform under the "Tax Cuts and Jobs Act" in the period of enactment. SAB 118 provides for a provisional one year measurement period for entities to finalize their accounting for certain income tax effects related to the "Tax Cuts and Jobs Act." The Company applied this guidance to its consolidated financial statements and related disclosures beginning in the quarter ended December 31, 2017. Refer to Note 18, "Income Taxes," of the notes to consolidated financial statements for further information.

In August 2017, the FASB issued ASU No. 2017-12, "Derivatives and Hedging (Topic 815): Targeted Improvements to Accounting for Hedging Activities." The ASU more closely aligns the results of hedge accounting with risk management activities through amendments to the designation and measurement guidance to better reflect a Company's hedging strategy and effectiveness. During the quarter ended December 31, 2017, the Company early adopted ASU 2017-12. The adoption of this guidance did not have a material impact on the Company's consolidated financial statements.

Recently Issued Accounting Pronouncements

In March 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 ASU requires the service cost component of net periodic benefit cost to be presented with other compensation costs. The other components of net periodic benefit cost are required to be presented in the income statement separately from the service cost component and outside a subtotal of income from operations, if one is presented. The ASU also allows only the service cost component of net periodic benefit cost to be eligible for capitalization. The guidance will be effective for the Company for the quarter ending December 31, 2018. Early adoption is permitted as of the beginning of an annual period for which financial statements (interim or annual) have not been issued or made available for issuance. The guidance will be effective retrospectively except for the capitalization of the service cost component which should be applied prospectively. The adoption of this guidance is not expected to have a significant impact on the Company's consolidated financial statements as the Company does not present a subtotal of income from operations within its consolidated statements of income.

In November 2016, the FASB issued ASU No. 2016-18, "Statement of Cash Flows (Topic 230): Restricted Cash (a consensus of the FASB Emerging Issues Task Force)." The ASU requires amounts generally described as restricted cash and restricted cash equivalents to 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 guidance will be effective for the Company for the quarter ending December 31, 2018, with early adoption permitted. The amendments in this update should be applied retrospectively to all periods presented. The impact of this guidance for the Company will depend on the levels of restricted cash balances in the periods presented. As of September 30, 2016, the Company had approximately $2.0 billion of restricted cash related to restricted proceeds deposited into escrow from the issuance of $2.0 billion aggregate principal of unsecured, unsubordinated notes by Adient Global Holdings Ltd., that were released upon the completion of the Adient spin-off in October 2016. Upon adoption of ASU 2016-18, the restricted proceeds will be presented in the fiscal 2016 consolidated statements of cash flow as a financing activity inflow, and the release of the restricted proceeds will be presented in the fiscal 2017 consolidated statements of cash flow as a financing activity outflow. The impact of adoption of this standard on fiscal 2018 consolidated statements of cash flow is not expected to be material as the restricted cash balance at September 30, 2018 is $15 million.

In October 2016, the FASB issued ASU No. 2016-16, "Accounting for Income Taxes: Intra-Entity Asset Transfers of Assets Other than Inventory." The ASU requires the tax effects of all intra-entity sales of assets other than inventory to be recognized in the period in which the transaction occurs. The guidance will be effective for the Company for the quarter ending December 31, 2018, with early adoption permitted but only in the first interim period of a fiscal year. The changes are required to be applied by means of a cumulative-effect adjustment recorded in retained earnings as of the beginning of the fiscal year of adoption. The Company expects that the cumulative effect of the adoption of ASU 2016-16 will result in a reduction to retained earnings of approximately $550 million.

In August 2016, the FASB issued ASU No. 2016-15, "Statement of Cash Flows (Topic 230): Classification of Certain Cash Receipts and Cash Payments." ASU No. 2016-15 provides clarification guidance on eight specific cash flow presentation issues in order to reduce the diversity in practice. ASU No. 2016-15 will be effective for the Company for the quarter ending December 31, 2018, with early adoption permitted. The guidance should be applied retrospectively to all periods presented, unless deemed impracticable, in which case prospective application is permitted. The adoption of this guidance is expected to have an impact on the presentation of equity swap funding and settlement activities since the activity will change from an operating activity to an investing activity. The Company does not expect any other significant impacts as a result of adopting this standard.

In February 2016, the FASB issued ASU No. 2016-02, "Leases (Topic 842)." ASU No. 2016-02 requires recognition of operating leases as lease assets and liabilities on the balance sheet, and disclosure of key information about leasing arrangements. The original standard was effective retrospectively for the Company for the quarter ending December 31, 2019 with early adoption permitted; however in July 2018 the FASB issued ASU No. 2018-11, "Leases (Topic 842): Targeted Improvements," which provides an additional transition method that permits changes to be applied by means of a cumulative-effect adjustment recorded in retained earnings as of the beginning of the fiscal year of adoption. The Company has elected this transition method at the adoption date of October 1, 2019. The Company has started the assessment process by evaluating the population of leases under the revised definition of what qualifies as a leased asset. The Company is the lessee under various agreements for facilities and equipment that are currently accounted for as operating leases. The new guidance will require the Company to record operating leases on the balance sheet with a right-of-use asset and corresponding liability for future payment obligations. Additionally in January 2018, the FASB issued ASU No. 2018-01, "Leases (Topic 842): Land Easement Practical Expedient for Transition to Topic 842," which provides an optional transition practical expedient for existing or expired land easements that were not previously recorded as leases. The Company expects the new guidance will have a material impact on its consolidated statements of financial position for the addition of right-of-use assets and lease liabilities, but the Company does not expect it to have a material impact on its consolidated statements of income and its consolidated statements of cash flows.

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." ASU No. 2016-01 amends certain aspects of recognition, measurement, presentation and disclosure of financial instruments, including marketable securities. ASU No. 2016-01 will be effective for the Company for the quarter ending December 31, 2018, and early adoption is not permitted, with certain exceptions. The changes are required to be applied by means of a cumulative-effect adjustment on the balance sheet as of the beginning of the fiscal year of adoption. Additionally in February 2018, the FASB issued ASU No. 2018-03, "Technical Corrections and Improvements to Financial Instruments-Overall (Subtopic 825-10): Recognition and Measurement of Financial Assets and Financial Liabilities," which provides additional clarification on certain topics addressed in ASU No. 2016-01. ASU No. 2018-01 will be effective for the Company when ASU No. 2016-01 is adopted. The impact of this guidance for the Company will depend on the magnitude of the unrealized gains and losses on the Company's marketable securities investments. The impact to beginning retained earnings as a result of the adoption of this guidance is not expected to be material.

In May 2014, the FASB issued ASU No. 2014-09, "Revenue from Contracts with Customers (Topic 606)." ASU No. 2014-09 clarifies the principles for recognizing revenue when an entity either enters into a contract with customers to transfer goods or services or enters into a contract for the transfer of non-financial assets. The original standard was effective retrospectively for the Company for the quarter ending December 31, 2017; however in August 2015, the FASB issued ASU No. 2015-14, "Revenue from Contracts with Customers (Topic 606): Deferral of the Effective Date," which defers the effective date of ASU No. 2014-09 by one-year for all entities. The new standard will become effective retrospectively for the Company for the quarter ending December 31, 2018, with early adoption permitted, but not before the original effective date. Additionally, in March 2016, the FASB issued ASU No. 2016-08, "Revenue from Contracts with Customers (Topic 606): Principal versus Agent Considerations (Reporting Revenue Gross versus Net)," in April 2016, the FASB issued ASU No. 2016-10, "Revenue from Contracts with Customers (Topic 606): Identifying Performance Obligations and Licensing," in May 2016, the FASB issued ASU No. 2016-12, "Revenue from Contracts with Customers (Topic 606): Narrow-Scope Improvements and Practical Expedients," and in December 2016, the FASB issued ASU No. 2016-20, "Technical Corrections and Improvements to Topic 606, Revenue from Contracts with Customers," all of which provide additional clarification on certain topics addressed in ASU No. 2014-09. ASU No. 2016-08, ASU No. 2016-10, ASU No. 2016-12 and ASU No. 2016-20 follow the same implementation guidelines as ASU No. 2014-09 and ASU No. 2015-14. The Company has elected to adopt the new revenue guidance as of October 1, 2018 using the modified retrospective approach. The Company has completed its evaluation of the new revenue recognition standard and has assessed the impact on its consolidated financial statements. Based on the Company’s evaluation of current contracts and significant revenue streams, revenue recognition is expected to be mostly consistent under both the current and new standard, with the exception of the Power Solutions business. Within the Power Solutions business, certain customers return battery cores which will be included in the transaction price as noncash consideration under the new revenue standard. This change is expected to result in an increase to annual Power Solutions revenue of approximately 10% - 15% and an immaterial impact to gross profit. The Company does not expect the new revenue standard will have a material impact on its consolidated statements of financial position or its consolidated statements of cash flows. Upon adoption of the new revenue recognition guidance, the Company expects to record approximately

$35 million to beginning retained earnings, which relates primarily to deferred revenue recorded for certain battery core returns that represent a material right provided to customers.

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

2. MERGER TRANSACTION

As discussed in Note 1, "Summary of Significant Accounting Policies," of the notes to consolidated financial statements, JCI Inc. and Tyco completed the Merger on September 2, 2016. The Merger was accounted for as a reverse acquisition using the acquisition method of accounting in accordance with ASC 805, "Business Combinations." Based on the structure of the Merger and other activities contemplated by the Merger Agreement, relative outstanding share ownership, the composition of the Company's board of directors and the designation of certain senior management positions of the Company, JCI Inc. was the accounting acquirer for financial reporting purposes.

Immediately prior to the Merger and in connection therewith, Tyco shareholders received 0.955 ordinary shares of Tyco (which shares are now referred to as shares of the Company, or “Company ordinary shares”) for each Tyco ordinary share they held by virtue of a 0.955-for-one share consolidation. In the Merger, each outstanding share of common stock, par value $1.00 per share, of JCI Inc. (“JCI Inc. common stock”) (other than shares held by JCI Inc., Tyco and certain of their subsidiaries) was converted into the right to receive either the cash consideration or the share consideration (each as described below), at the election of the holder, subject to proration procedures described in the Merger Agreement and applicable withholding taxes. The election to receive the cash consideration was undersubscribed. As a result, holders of shares of JCI Inc. common stock that elected to receive the share consideration and holders of shares of JCI Inc. common stock that made no election (or failed to properly make an election) became entitled to receive, for each such share of JCI Inc. common stock, $5.7293 in cash, without interest, and 0.8357 Company ordinary shares, subject to applicable withholding taxes. Holders of shares of JCI Inc. common stock that elected to receive the cash consideration became entitled to receive, for each such share of JCI Inc. common stock, $34.88 in cash, without interest, subject to applicable withholding taxes. In the Merger, JCI Inc. shareholders received, in the aggregate, approximately $3.864 billion in cash. Immediately after the closing of, and giving effect to, the Merger, former JCI Inc. shareholders owned approximately 56% of the issued and outstanding Company ordinary shares and former Tyco stockholders owned approximately 44% of the issued and outstanding Company ordinary shares.

Tyco is a leading global provider of security products and services as well as fire detection and suppression products and services. The acquisition of Tyco brings together best-in-class product, technology and service capabilities across controls, fire, security, HVAC and power solutions to serve various end-markets including large institutions, commercial buildings, retail, industrial, small business and residential. The combination of the Tyco and JCI Inc. buildings platforms creates immediate opportunities for near-term growth through cross-selling, complementary branch and channel networks, and expanded global reach for established businesses. The new Company also benefits by combining innovation capabilities and pipelines involving new products, advanced solutions for smart buildings and cities, value-added services driven by advanced data and analytics.

Fair Value of Consideration Transferred

The total fair value of consideration transferred was approximately $19.7 billion. Total consideration is comprised of the equity value of the Tyco shares that were outstanding as of September 2, 2016 and the portion of Tyco's share awards and share options earned as of September 2, 2016 ($224 million). Share awards and share options not earned ($101 million) as of September 2, 2016 will be expensed over the remaining future vesting period.

The following table summarizes the total fair value of consideration transferred:

(in millions, except for share consolidation ratio and share data)

Number of Tyco shares outstanding at September 2, 2016		427,181,743
Tyco share consolidation ratio		0.955
Tyco ordinary shares outstanding following the share consolidation and immediately prior to the Merger		407,958,565
JCI Inc. converted share price (1)	$	47.67
Fair value of equity portion of the Merger consideration	$	19,447
Fair value of Tyco equity awards		224
Total fair value of consideration transferred	**$**	**19,671**

(1) Amount equals JCI Inc. closing share price and market capitalization at September 2, 2016 ($45.45 and $29,012 million, respectively) adjusted for the Tyco $3,864 million cash contribution used to purchase 110.8 million shares of JCI Inc. common stock for $34.88 per share.

Fair Value of Assets Acquired and Liabilities Assumed

The Company accounted for the Merger with Tyco as a business combination using the acquisition method of accounting. The assets acquired and liabilities assumed were recorded at their respective fair values as of the acquisition date. Fair value estimates are based on a complex series of judgments about future events and uncertainties and rely heavily on estimates and assumptions. The judgments used to determine the estimated fair value assigned to each class of assets acquired and liabilities assumed, as well as asset lives, can materially impact the Company's results of operations.

The fair values of the assets acquired and liabilities assumed are as follows (in millions):

Cash and cash equivalents	$	489
Accounts receivable		2,034
Inventories		807
Other current assets		617
Property, plant, and equipment - net		1,216
Goodwill		16,105
Intangible assets - net		6,384
Other noncurrent assets		536
Total assets acquired	$	28,188
Short-term debt	$	462
Accounts payable		725
Accrued compensation and benefits		312
Other current liabilities		1,481
Long-term debt		6,416
Long-term deferred tax liabilities		718
Long-term pension and postretirement benefits		774
Other noncurrent liabilities		1,456
Total liabilities acquired	$	12,344
Noncontrolling interests		37
Net assets acquired	$	15,807
Cash consideration paid to JCI Inc. shareholders		3,864
Total fair value of consideration transferred	$	19,671

In connection with the Merger, the Company recorded goodwill of $16.1 billion, which is attributable primarily to expected synergies, expanded market opportunities, and other benefits that the Company believes will result from combining its operations with the operations of Tyco. Goodwill has been allocated to the reporting units within Building Technologies & Solutions business based on the expected benefits from the Merger. The Company recorded a net reduction in goodwill of $258 million in fiscal 2017 related to purchase price allocations. The goodwill created in the Merger is not deductible for tax purposes.

The purchase price allocation to identifiable intangible assets acquired are as follows:

	Fair Value (in millions)	Weighted Average Life (in years)
Customer relationships	$ 2,280	12
Completed technology	1,650	11
Other definite-lived intangibles	214	7
Indefinite-lived trademarks	2,080	
Other indefinite-lived intangibles	90	
In-process research and development	70	
Total identifiable intangible assets	$ 6,384	

Actual and Pro Forma Impact

The Company's consolidated financial statements for the fiscal year ended September 30, 2016 include Tyco's results of operations from the acquisition date of September 2, 2016 through September 30, 2016. Net sales and net income (loss) from continuing operations attributable to Tyco during this period and included in the Company's consolidated financial statements for the fiscal year ended September 30, 2016 total $808 million and ($48) million, respectively.

The following unaudited pro forma information assumes the acquisition had occurred on October 1, 2014, and had been included in the Company's consolidated statement of income for fiscal year 2016.

	Year Ended September 30,
(in millions)	2016
Pro forma net sales	$ 29,647
Pro forma net income from continuing operations	1,143

In order to reflect the occurrence of the acquisition on October 1, 2014 as required, the unaudited pro forma results include adjustments to reflect, among other things, the amortization of the inventory step-up, the incremental intangible asset amortization to be incurred based on the preliminary values of each identifiable intangible asset, the change in timing of defined benefit plans' mark-to-market gain or loss recognition, the change in timing of transaction and restructuring costs, and interest expense from debt financing obtained to fund the cash consideration paid to JCI Inc. shareholders. These pro forma amounts are not necessarily indicative of the results that would have been obtained if the acquisition had occurred as of the beginning of the period presented or that may occur in the future, and does not reflect future synergies, integration costs, or other such costs or savings. Additional information regarding fiscal 2016 pro forma information can be found in the Form 8-K filed by the Company with the SEC on November 8, 2016 under Item 7.01, “Regulation FD Disclosure.”

3. ACQUISITIONS AND DIVESTITURES

Fiscal Year 2018

During fiscal 2018, the Company completed certain acquisitions for a combined purchase price, net of cash acquired, of $21 million, all of which was paid as of September 30, 2018. The acquisitions in the aggregate were not material to the Company’s consolidated financial statements. In connection with the acquisitions, the Company recorded goodwill of $14 million within the Global Products segment and $1 million within the Building Solutions EMEA/LA segment.

In the first quarter of fiscal 2018, the Company completed the sale of its Scott Safety business to 3M Company. The selling price, net of cash divested, was $2.0 billion, all of which was received as of September 30, 2018. In connection with the sale, the Company recorded a pre-tax gain of $114 million within selling, general and administrative expenses in the consolidated statements of income and reduced goodwill in assets held for sale by $1.2 billion. The gain, net of tax, recorded was $84 million. Net cash proceeds from the transaction of approximately $1.9 billion were used to repay a significant portion of the Tyco International Holding S.a.r.L.'s ("TSarl") $4.0 billion of merger-related debt. The Scott Safety business is included in the Global Products segment and was reported within assets and liabilities held for sale in the consolidated statements of financial position as of September 30, 2017. Refer to Note 4, "Discontinued Operations," of the notes to consolidated financial statements for further disclosure related to the Company's net assets held for sale.

Also during fiscal 2018, the Company completed certain divestitures primarily within the Global Products business. The combined selling price was $204 million, all of which was received as of September 30, 2018. In connection with the divestitures, the Company reduced goodwill by $35 million. The divestitures were not material to the Company's consolidated financial statements.

Fiscal Year 2017

During fiscal 2017, the Company completed three acquisitions for a combined purchase price, net of cash acquired, of $9 million, $6 million of which was paid as of September 30, 2017. The acquisitions in the aggregate were not material to the Company's consolidated financial statements. In connection with the acquisitions, the Company recorded goodwill of $2 million.

In the second quarter of fiscal 2017, the Company completed the sale of its ADT security business in South Africa within the Building Solutions EMEA/LA segment. The selling price, net of cash divested, was $129 million, all of which was received as of September 30, 2017. In connection with the sale, the Company reduced goodwill in assets held for sale by $92 million. The divestiture was not material to the Company's consolidated financial statements.

During fiscal 2017, the Company completed two divestitures for a combined selling price, net of cash divested, of $44 million, of which $40 million was received as of September 30, 2017. The divestitures were not material to the Company's consolidated financial statements. In connection with the divestitures, the Company reduced goodwill by $19 million and $2 million in the Global Products segment and in the Building Solutions Asia Pacific segment, respectively.

During fiscal 2017, the Company completed one additional divestiture for a sales price of $4 million, all of which was received as of September 30, 2017. The divestiture decreased the Company's ownership from a controlling to noncontrolling interest, and as a result, the Company deconsolidated cash of $5 million. The divestiture was not material to the Company's consolidated financial statements.

During fiscal 2017, the Company received $52 million in net cash proceeds related to prior year business divestitures and paid $75 million related to prior year business acquisitions.

Fiscal Year 2016

On October 1, 2015, the Company formed a joint venture with Hitachi to expand its Building Technologies & Solutions product offerings. The Company acquired a 60% ownership interest in the new entity for approximately $208 million ($638 million purchase price less cash acquired of $430 million), $133 million of which was paid as of September 30, 2016. In connection with the acquisition, the Company recorded goodwill of $253 million related to purchase price allocations.

Also during fiscal 2016, the Company completed two additional acquisitions for a combined purchase price, net of cash acquired, of $6 million, $3 million of which was paid as of September 30, 2016. The acquisitions in aggregate were not material to the Company's consolidated financial statements. In connection with the acquisitions, the Company recorded goodwill of $6 million. One of the acquisitions increased the Company's ownership from a noncontrolling to controlling interest. As a result, the Company recorded a non-cash gain of $4 million in equity income for the Global Products segment to adjust the Company's existing equity investment in the partially-owned affiliate to fair value.

In the fourth quarter of fiscal 2016, the Company completed two divestitures for a combined sales price of $39 million, net of cash divested of $13 million. None of the sales proceeds were received as of September 30, 2016. The divestitures were not material to the Company's consolidated financial statements. In connection with the divestitures, the Company reduced goodwill by $16 million in the Global Products segment.

In the third quarter of fiscal 2016, the Company completed a divestiture for a sales price of $16 million, all of which was received as of September 30, 2016. The divestiture was not material to the Company's consolidated financial statements. In connection with the divestiture, the Company reduced goodwill by $3 million in the Building Solutions North America segment.

During fiscal 2016, the Company received $29 million in net cash proceeds related to prior year business divestitures.

4. DISCONTINUED OPERATIONS

As discussed in Note 1, "Summary of Significant Accounting Policies," of the notes to consolidated financial statements, on October 31, 2016, the Company completed the spin-off of its Automotive Experience business by way of the transfer of the Automotive Experience business from Johnson Controls to Adient plc. The Company did not retain any equity interest in Adient plc. During the first quarter of fiscal 2017, the Company determined that Adient met the criteria to be classified as a discontinued operation and, as a result, Adient's historical financial results are reflected in the Company's consolidated financial statements as a discontinued operation, and assets and liabilities are classified as assets and liabilities held for sale. The Company did not allocate any general corporate overhead to discontinued operations.

The following table summarizes the results of Adient, reclassified as discontinued operations for the fiscal years ended September 30, 2017 and 2016 (in millions). As the Adient spin-off occurred on October 31, 2016, there is only one month of Adient results included in the year ended September 30, 2017.

	Year Ended September 30,	
	2017	2016
Net sales	$ 1,434	$ 16,837
Income from discontinued operations before income taxes	1	525
Provision for income taxes on discontinued operations	35	2,041
Income from discontinued operations attributable to noncontrolling interests, net of tax	9	84
Loss from discontinued operations	$ (43)	$ (1,600)

For the fiscal year ended September 30, 2017, the income from discontinued operations before income taxes included separation costs of $79 million. For the fiscal year ended September 30, 2016, the income from discontinued operations before income taxes included separation costs ($418 million), significant restructuring and impairment costs ($332 million), and net mark-to market losses on pension and postretirement plans ($110 million).

For the fiscal year ended September 30, 2017, the effective tax rate was more than the Irish statutory rate of 12.5% primarily due to the tax impacts of separation costs and Adient spin-off related tax expense, partially offset by non-U.S. tax rate differentials.

In preparation for the spin-off of the Automotive Experience business in the first quarter of fiscal 2017, the Company incurred incremental tax expense of $95 million in fiscal 2016. The Company also completed substantial business reorganizations which resulted in total tax charges of $1,891 million in fiscal 2016. Included in this amount is the tax charge provided for in the third quarter of fiscal 2016 of $85 million for changes in entity tax status and the charge provided for in the second quarter of fiscal 2016 of $780 million for income tax expense on foreign undistributed earnings of certain non-U.S. subsidiaries.

In fiscal 2016, the Company did provide U.S. income tax expense related to the restructuring and repatriation of cash for certain non-U.S. subsidiaries in connection with the Automotive Experience planned spin-off. At September 30, 2016 the Company needed to complete the final steps of Automotive Experience restructuring and, as a result, the Company provided deferred taxes of $24 million for the U.S. income tax expense on outside basis differences that reversed upon the completion of the restructuring.

The following table summarizes depreciation and amortization, capital expenditures, and significant operating and investing non-cash items related to Adient for the fiscal years ended September 30, 2017 and 2016 (in millions):

	Year Ended September 30,	
	2017	2016
Depreciation and amortization	$ 29	$ 331
Pension and postretirement benefit expense	—	113
Equity in earnings of partially-owned affiliates	(31)	(357)
Deferred income taxes	562	(476)
Non-cash restructuring and impairment costs	—	87
Equity-based compensation	1	16
Accrued income taxes	(808)	—
Other	—	(2)
Capital expenditures	(91)	(395)

Assets and Liabilities Held for Sale

During the second quarter of fiscal 2017, the Company signed a definitive agreement to sell its Scott Safety business of the Global Products segment to 3M Company. The transaction closed on October 4, 2017. The assets and liabilities of this business are presented as held for sale in the consolidated statements of financial position as of September 30, 2017. The business did not meet the criteria to be classified as a discontinued operation as the divestiture of the Scott Safety business did not have a major effect on the Company's operations and financial results.

The following table summarizes the carrying value of the Scott Safety assets and liabilities held for sale at September 30, 2017 (in millions):

	September 30, 2017
Cash	$ 9
Accounts receivable - net	100
Inventories	75
Other current assets	5
Assets held for sale	$ 189
Property, plant and equipment - net	$ 79
Goodwill	1,248
Other intangible assets - net	592
Other noncurrent assets	1
Noncurrent assets held for sale	$ 1,920
Accounts payable	$ 37
Accrued compensation and benefits	10
Other current liabilities	25
Liabilities held for sale	$ 72
Other noncurrent liabilities	$ 173
Noncurrent liabilities held for sale	$ 173

5. INVENTORIES

Inventories consisted of the following (in millions):

	September 30, 2018	September 30, 2017
Raw materials and supplies	$ 990	$ 919
Work-in-process	545	567
Finished goods	1,689	1,723
Inventories	$ 3,224	$ 3,209

6. PROPERTY, PLANT AND EQUIPMENT

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

	September 30, 2018	September 30, 2017
Buildings and improvements	$ 2,537	$ 2,445
Subscriber systems	573	571
Machinery and equipment	6,049	5,572
Construction in progress	1,324	1,252
Land	363	373
Total property, plant and equipment	10,846	10,213
Less: accumulated depreciation	(4,675)	(4,092)
Property, plant and equipment - net	$ 6,171	$ 6,121

Interest costs capitalized during the fiscal years ended September 30, 2018, 2017 and 2016 were $29 million, $27 million and $19 million, respectively. Accumulated depreciation related to capital leases at September 30, 2018 and 2017 was $16 million and $13 million, respectively.

7. GOODWILL AND OTHER INTANGIBLE ASSETS

The changes in the carrying amount of goodwill in each of the Company's reportable segments for the fiscal years ended September 30, 2018 and 2017 were as follows (in millions):

	September 30, 2016	Business Acquisitions	Business Divestitures	Currency Translation and Other	September 30, 2017
Building Technologies & Solutions					
Building Solutions North America	$ 9,734	$ (147)	$ —	$ 50	$ 9,637
Building Solutions EMEA/LA	1,981	(37)	—	68	2,012
Building Solutions Asia Pacific	1,260	(14)	(2)	11	1,255
Global Products	6,963	(58)	(1,267)	49	5,687
Power Solutions	1,086	—	—	11	1,097
Total	$ 21,024	$ (256)	$ (1,269)	$ 189	$ 19,688

	September 30, 2017	Business Acquisitions	Business Divestitures	Currency Translation and Other	September 30, 2018
Building Technologies & Solutions					
Building Solutions North America	$ 9,637	$ —	$ —	$ (34)	$ 9,603
Building Solutions EMEA/LA	2,012	1	—	(63)	1,950
Building Solutions Asia Pacific	1,255	—	—	(20)	1,235
Global Products	5,687	14	(35)	(73)	5,593
Power Solutions	1,097	—	—	(5)	1,092
Total	$ 19,688	$ 15	$ (35)	$ (195)	$ 19,473

The fiscal 2017 Global Products business divestiture amount includes $1,248 million of goodwill transferred to noncurrent assets held for sale on the consolidated statements of financial position for the sale of the Scott Safety business. Refer to Note 4, "Discontinued Operations," of the notes to consolidated financial statements for further information regarding the Company's assets and liabilities held for sale.

At September 30, 2016, accumulated goodwill impairment charges included $47 million related to the Building Solutions EMEA/LA - Latin America reporting unit.

There were no goodwill impairments resulting from fiscal 2018 and 2017 annual impairment tests. No reporting unit was determined to be at risk of failing step one of the goodwill impairment test. The Company continuously monitors for events and circumstances that could negatively impact the key assumptions in determining fair value, including long-term revenue growth projections, profitability, discount rates, recent market valuations from transactions by comparable companies, volatility in the Company's market capitalization, and general industry, market and macro-economic conditions. It is possible that future changes in such circumstances, or in the variables associated with the judgments, assumptions and estimates used in assessing the fair value of the reporting unit, would require the Company to record a non-cash impairment charge.

The assumptions included in the impairment tests require judgment, and changes to these inputs could impact the results of the calculations. The primary assumptions used in the impairment tests were management's projections of future cash flows. Although the Company's cash flow forecasts are based on assumptions that are considered reasonable by management and consistent with the plans and estimates management is using to operate the underlying businesses, there are significant judgments in determining the expected future cash flows attributable to a reporting unit.

The Company's other intangible assets, primarily from business acquisitions valued based on independent appraisals, consisted of (in millions):

	September 30, 2018			September 30, 2017		
	Gross Carrying Amount	Accumulated Amortization	Net	Gross Carrying Amount	Accumulated Amortization	Net
Amortized intangible assets						
Technology	$ 1,334	$ (266)	$ 1,068	$ 1,328	$ (137)	$ 1,191
Customer relationships	3,078	(664)	2,414	3,168	(486)	2,682
Miscellaneous	496	(200)	296	389	(147)	242
Total amortized intangible assets	4,908	(1,130)	3,778	4,885	(770)	4,115
Unamortized intangible assets						
Trademarks/tradenames	2,448	—	2,448	2,483	—	2,483
Miscellaneous	122	—	122	143	—	143
	2,570	—	2,570	2,626	—	2,626
Total intangible assets	$ 7,478	$ (1,130)	$ 6,348	$ 7,511	$ (770)	$ 6,741

Refer to Note 2, "Merger Transaction," of the notes to consolidated financial statements for additional information of intangibles recorded as a result of the Tyco Merger.

Amortization of other intangible assets included within continuing operations for the fiscal years ended September 30, 2018, 2017 and 2016 was $384 million, $489 million and $116 million, respectively. Excluding the impact of any future acquisitions, the Company anticipates amortization for fiscal 2019, 2020, 2021, 2022 and 2023 will be approximately $406 million, $394 million, $391 million, $378 million and $364 million, respectively. There were no indefinite-lived intangible asset impairments resulting from fiscal 2018, 2017 and 2016 annual impairment tests.

8. LEASES

Certain administrative and production facilities and equipment are leased under long-term agreements. Most leases contain renewal options for varying periods, and certain leases include options to purchase the leased property during or at the end of the lease term. Leases generally require the Company to pay for insurance, taxes and maintenance of the property. Leased capital assets included in net property, plant and equipment, primarily buildings and improvements, were $32 million and $17 million at September 30, 2018 and 2017, respectively.

Other facilities and equipment are leased under arrangements that are accounted for as operating leases. Total rental expense for continuing and discontinued operations for the fiscal years ended September 30, 2018, 2017 and 2016 was $467 million, $502 million and $402 million, respectively.

Future minimum capital and operating lease payments and the related present value of capital lease payments at September 30, 2018 were as follows (in millions):

	Capital Leases	Operating Leases
2019	$ 5	$ 348
2020	6	284
2021	6	208
2022	15	152
2023	2	111
After 2023	9	97
Total minimum lease payments	43	$ 1,200
Interest	(7)	
Present value of net minimum lease payments	$ 36	

9. DEBT AND FINANCING ARRANGEMENTS

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

	September 30, 2018	September 30, 2017
Bank borrowings and commercial paper	$ 1,315	$ 1,214
Weighted average interest rate on short-term debt outstanding	2.8%	1.6%

In connection with the Tyco Merger, JCI Inc. replaced its $2.5 billion committed five-year credit facility scheduled to mature in August 2018 with a $2.0 billion committed four-year credit facility scheduled to mature in August 2020. Additionally, TSarl, a wholly-owned subsidiary of Johnson Controls, entered into a $1.0 billion committed four-year credit facility scheduled to mature in August 2020. The TSarl facility was increased to $1.25 billion in March 2018. The facilities are used to support the Company's outstanding commercial paper. There were no draws on either committed credit facilities during the fiscal years ended September 30, 2018 and 2017. Commercial paper outstanding as of September 30, 2018 and 2017 was $879 million and $954 million, respectively.

In March 2018, the Company entered into a 364-day $250 million committed revolving credit facility scheduled to expire in March 2019. As of September 30, 2018, there were no draws on the facility.

In March 2018, a 364-day $150 million committed revolving credit facility expired. The Company entered into a new $150 million committed revolving credit facility scheduled to expire in February 2019. As of September 30, 2018, there were no draws on the facility.

In February 2018, a 364-day $150 million committed revolving credit facility expired. The Company entered into a new $150 million committed revolving credit facility scheduled to expire in February 2019. As of September 30, 2018, there were no draws on the facility.

In January 2018, a 364-day $250 million committed revolving credit facility expired. The Company entered into a new $200 million committed revolving credit facility scheduled to expire in January 2019. As of September 30, 2018, there were no draws on the facility.

In December 2017, the Company repaid a 364-day 150 million euro floating rate term loan, plus accrued interest, scheduled to mature in September 2018.

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

	September 30, 2018	September 30, 2017
Unsecured notes		
JCI plc - 1.4% due in 2018 ($259 million par value)	$ —	$ 259
JCI Inc. - 1.4% due in 2018 ($41 million par value)	—	42
JCI plc - 3.75% due in 2018 ($49 million par value)	—	49
Tyco International Finance S.A. ("TIFSA") - 3.75% due in 2018 ($18 million par value)	—	18
JCI plc - 5.00% due in 2020 ($453 million par value)	452	452
JCI Inc. - 5.00% due in 2020 ($47 million par value)	47	47
JCI plc - 0.00% due in 2021 (€750 million par value)	868	—
JCI plc - 4.25% due in 2021 ($447 million par value)	446	446
JCI Inc. - 4.25% due in 2021 ($53 million par value)	53	53
JCI plc - 3.75% due in 2022 ($428 million par value)	427	427
JCI Inc. - 3.75% due in 2022 ($22 million par value)	22	22
JCI plc - 4.625% due in 2023 ($35 million par value)	37	38
TIFSA - 4.625% due in 2023 ($7 million par value)	8	8
JCI plc - 1.00% due in 2023 (€1,000 million par value)	1,154	1,171
JCI plc - 3.625% due in 2024 ($468 million par value)	468	468
JCI Inc. - 3.625% due in 2024 ($31 million par value)	31	31
JCI plc - 1.375% due in 2025 (€423 million par value)	501	510
TIFSA - 1.375% due in 2025 (€58 million par value)	69	70
JCI plc - 3.90% due in 2026 ($698 million par value)	755	763
TIFSA - 3.90% due in 2026 ($51 million par value)	52	53
JCI plc - 6.00% due in 2036 ($392 million par value)	388	388
JCI Inc. - 6.00% due in 2036 ($8 million par value)	8	8
JCI plc - 5.70% due in 2041 ($270 million par value)	269	269
JCI Inc. - 5.70% due in 2041 ($30 million par value)	30	30
JCI plc - 5.25% due in 2042 ($242 million par value)	242	242
JCI Inc. - 5.25% due in 2042 ($8 million par value)	8	8
JCI plc - 4.625% due in 2044 ($445 million par value)	441	441
JCI Inc. - 4.625% due in 2044 ($6 million par value)	6	6
JCI plc - 5.125% due in 2045 ($727 million par value)	867	872
TIFSA - 5.125% due in 2045 ($23 million par value)	23	23
JCI plc - 6.95% due in 2046 ($121 million par value)	121	121
JCI Inc. - 6.95% due in 2046 ($4 million par value)	4	4
JCI plc - 4.50% due in 2047 ($500 million par value)	496	495
JCI plc - 4.95% due in 2064 ($435 million par value)	434	434
JCI Inc. - 4.95% due in 2064 ($15 million par value)	15	15
TSarl - Term Loan A - LIBOR plus 1.25% due in 2020	364	3,700
TSarl - Term Loan B - €215 million; EURIBOR plus 0.62% due in 2020	250	—
JCI plc - Term Loan - 35 billion yen; LIBOR JPY plus 0.40% due in 2022	309	311
Capital lease obligations	36	19
Other	23	90
Gross long-term debt	9,724	12,403
Less: current portion	26	394
Less: debt issuance costs	44	45
Net long-term debt	$ 9,654	$ 11,964

The installments of long-term debt maturing in subsequent fiscal years are: 2019 - $26 million; 2020 - $1,118 million; 2021 - $1,371 million; 2022 - $772 million; 2023 - $1,201 million; 2024 and thereafter - $5,236 million. The Company's long-term debt includes various financial covenants, none of which are expected to restrict future operations.

Total interest paid on both short and long-term debt for the fiscal years ended September 30, 2018, 2017 and 2016 was $415 million, $448 million and $319 million, respectively. The Company used financial instruments to manage its interest rate exposure in fiscal 2016 and the first quarter of 2017 (see Note 10, "Derivative Instruments and Hedging Activities," and Note 11, "Fair Value Measurements," of the notes to consolidated financial statements). These instruments affected the weighted average interest rate of the Company's debt and interest expense.

Financing Arrangements

Financing in connection with Tyco Merger and subsequent activities

Simultaneously with the closing of the Tyco Merger on September 2, 2016, TSarl borrowed $4.0 billion under the Term Loan Credit Agreement dated as of March 10, 2016 with a syndicate of lenders, providing for a three and a half year senior unsecured term loan facility to finance the cash consideration for, and fees, expenses and costs incurred in connection with the Merger. During fiscal 2017, the Company partially repaid $300 million of the $4.0 billion floating rate term loan scheduled to expire in March 2020. In October 2017, the Company completed the previously announced sale of its Scott Safety business to 3M. Net cash proceeds from the transaction of approximately $1.9 billion were used to repay a significant portion of the TSarl $4.0 billion of merger related debt. In March 2018, the Company repaid $26 million in principal amount, plus accrued interest. In April 2018, the Company refinanced approximately $400 million of the TSarl merger related debt with commercial paper. In July 2018, the Company refinanced approximately $250 million in principal amount of the TSarl merger related debt with a 364-day $250 million floating rate term loan scheduled to mature in July 2019. In September 2018, the Company repaid approximately $450 million in principal amount, plus accrued interest, and refinanced approximately $250 million of the TSarl merger related debt with an 18-month 215 million euro floating rate term loan scheduled to mature in March 2020.

Other financing arrangements

In January 2018, the Company retired $67 million in principal amount, plus accrued interest, of its 3.75% fixed rate notes that expired in January 2018.

In November 2017, the Company issued 750 million euro in principal amount of 0.0% senior unsecured fixed rate notes due in December 2020. Proceeds from the issuance were used to repay existing debt and for other general corporate purposes.

In November 2017, the Company retired $300 million in principal amount, plus accrued interest, of its 1.4% fixed rate notes that expired in November 2017.

Net Financing Charges

The Company's net financing charges line item in the consolidated statements of income for the years ended September 30, 2018, 2017 and 2016 contained the following components (in millions):

	Year Ended September 30,		
	2018	2017	2016
Interest expense, net of capitalized interest costs	$ 437	$ 466	$ 293
Banking fees and bond cost amortization	58	67	30
Interest income	(29)	(19)	(12)
Net foreign exchange results for financing activities	(25)	(18)	(22)
Net financing charges	$ 441	$ 496	$ 289

10. DERIVATIVE INSTRUMENTS AND HEDGING ACTIVITIES

The Company selectively uses derivative instruments to reduce market risk associated with changes in foreign currency, commodities, stock-based compensation liabilities and interest rates. Under Company policy, the use of derivatives is restricted to those intended for hedging purposes; the use of any derivative instrument for speculative purposes is strictly prohibited. A description of each type of derivative utilized by the Company to manage risk is included in the following paragraphs. In addition, refer to Note 11, "Fair Value Measurements," of the notes to consolidated financial statements for information related to the fair value measurements and valuation methods utilized by the Company for each derivative type.

Cash Flow Hedges

The Company has global operations and participates in the foreign exchange markets to minimize its risk of loss from fluctuations in foreign currency exchange rates. The Company selectively hedges anticipated transactions that are subject to foreign exchange rate risk primarily using foreign currency exchange hedge contracts. The Company hedges 70% to 90% of the nominal amount of each of its known foreign exchange transactional exposures. As cash flow hedges under ASC 815, "Derivatives and Hedging," the hedge gains or losses due to changes in fair value are initially recorded as a component of AOCI and are subsequently reclassified into earnings when the hedged transactions occur and affect earnings. These contracts were highly effective in hedging the variability in future cash flows attributable to changes in currency exchange rates at September 30, 2018 and 2017.

The Company selectively hedges anticipated transactions that are subject to commodity price risk, primarily using commodity hedge contracts, to minimize overall price risk associated with the Company's purchases of lead, copper, tin, aluminum and polypropylene in cases where commodity price risk cannot be naturally offset or hedged through supply base fixed price contracts. Commodity risks are systematically managed pursuant to policy guidelines. As cash flow hedges, hedge gains or losses due to changes in fair value are initially recorded as a component of AOCI and are subsequently reclassified into earnings when the hedged transactions, typically sales, occur and affect earnings. The maturities of the commodity hedge contracts coincide with the expected purchase of the commodities. These contracts were highly effective in hedging the variability in future cash flows attributable to changes in commodity prices at September 30, 2018 and 2017.

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

	Volume Outstanding as of	
Commodity	September 30, 2018	September 30, 2017
Copper	3,175	1,962
Polypropylene	15,868	19,563
Lead	49,066	24,705
Aluminum	3,381	2,169
Tin	3,076	1,715

Fair Value Hedges

The Company selectively uses interest rate swaps to reduce market risk associated with changes in interest rates for its fixed-rate bonds. As fair value hedges, the interest rate swaps and related debt balances are valued under a market approach using publicized swap curves. Changes in the fair value of the swap and hedged portion of the debt are recorded in the consolidated statements of income. As of September 30, 2016, the Company had four fixed to floating interest rate swaps totaling $400 million to hedge the coupon of its 2.6% notes that matured in December 2016, three fixed to floating interest rate swaps totaling $300 million to hedge the coupon of its 1.4% notes maturing November 2017 and one fixed to floating interest rate swap totaling $150 million to hedge the coupon of its 7.125% notes maturing in July 2017. In December 31, 2016, the remaining four outstanding interest rate swaps were terminated. The Company had no interest rate swaps outstanding at September 30, 2018 and 2017.

Net Investment Hedges

The Company enters into foreign currency denominated debt obligations to selectively hedge portions of its net investment in non-U.S. subsidiaries. The currency effects of the debt obligations are reflected in the AOCI account within shareholders' equity attributable to Johnson Controls ordinary shareholders where they offset currency gains and losses recorded on the Company's net investments globally. At September 30, 2018, the Company had one billion euro, 750 million euro, 423 million euro, and 58 million euro in bonds and a 215 million euro term loan designated as net investment hedges in the Company's net investment in Europe and 35 billion yen of foreign denominated debt designated as net investment hedge in the Company's net investment in Japan. At September 30, 2017, the Company had one billion euro, 423 million euro and 58 million euro bonds designated as net investment hedges in the Company's net investment in Europe and 35 billion yen of foreign denominated debt designated as net investment hedge in the Company's net investment in Japan.

Derivatives Not Designated as Hedging Instruments

The Company selectively uses equity swaps to reduce market risk associated with certain of its stock-based compensation plans, such as its deferred compensation plans. These equity compensation liabilities increase as the Company's stock price increases and decrease as the Company's stock price decreases. In contrast, the value of the swap agreement moves in the opposite direction of these liabilities, allowing the Company to fix a portion of the liabilities at a stated amount. As of September 30, 2018, the Company hedged approximately 1.8 million of its ordinary shares, which have a cost basis of $73 million. As of September 30, 2017 the Company hedged approximately 1.4 million of its ordinary shares, which have a cost basis of $58 million.

The Company also holds certain foreign currency forward contracts which do not qualify for hedge accounting treatment. The change in fair value of foreign currency exchange derivatives not designated as hedging instruments under ASC 815 are recorded in the consolidated statements of income.

Fair Value of Derivative Instruments

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

	Derivatives and Hedging Activities Designated as Hedging Instruments under ASC 815		Derivatives and Hedging Activities Not Designated as Hedging Instruments under ASC 815	
	September 30, 2018	September 30, 2017	September 30, 2018	September 30, 2017
Other current assets				
Foreign currency exchange derivatives	$ 6	$ 27	$ 10	$ —
Commodity derivatives	1	9	—	—
Other noncurrent assets				
Equity swap	—	—	63	55
Total assets	$ 7	$ 36	$ 73	$ 55
Other current liabilities				
Foreign currency exchange derivatives	$ 10	$ 21	$ 2	$ 25
Commodity derivatives	14	1	—	—
Long-term debt				
Foreign currency denominated debt	3,149	2,058	—	—
Total liabilities	$ 3,173	$ 2,080	$ 2	$ 25

Counterparty Credit Risk

The use of derivative financial instruments exposes the Company to counterparty credit risk. The Company has established policies and procedures to limit the potential for counterparty credit risk, including establishing limits for credit exposure and continually assessing the creditworthiness of counterparties. As a matter of practice, the Company deals with major banks worldwide having strong investment grade long-term credit ratings. To further reduce the risk of loss, the Company generally enters into International Swaps and Derivatives Association ("ISDA") master netting agreements with substantially all of its counterparties. The Company's derivative contracts do not contain any credit risk related contingent features and do not require collateral or other security to be furnished by the Company or the counterparties. The Company's exposure to credit risk associated with its derivative instruments is measured on an individual counterparty basis, as well as by groups of counterparties that share similar attributes. The Company does not anticipate any non-performance by any of its counterparties, and the concentration of risk with financial institutions does not present significant credit risk to the Company.

The Company enters into ISDA master netting agreements with counterparties that permit the net settlement of amounts owed under the derivative contracts. The master netting agreements generally provide for net settlement of all outstanding contracts with a counterparty in the case of an event of default or a termination event. The Company has not elected to offset the fair value positions of the derivative contracts recorded in the consolidated statements of financial position. Collateral is generally not required of the Company or the counterparties under the master netting agreements. As of September 30, 2018 and 2017, no cash collateral was received or pledged under the master netting agreements.

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

	Fair Value of Assets		Fair Value of Liabilities	
	September 30, 2018	September 30, 2017	September 30, 2018	September 30, 2017
Gross amount recognized	$ 80	$ 91	$ 3,175	$ 2,105
Gross amount eligible for offsetting	(12)	(16)	(12)	(16)
Net amount	$ 68	$ 75	$ 3,163	$ 2,089

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

The following table presents the pre-tax gains (losses) recorded in other comprehensive income (loss) related to cash flow hedges for the fiscal years ended September 30, 2018, 2017 and 2016 (in millions):

	Year Ended September 30,		
Derivatives in ASC 815 Cash Flow Hedging Relationships	2018	2017	2016
Foreign currency exchange derivatives	$ 2	$ (1)	$ (18)
Commodity derivatives	(14)	14	3
Total	$ (12)	$ 13	$ (15)

The following table presents the location and amount of the pre-tax gains (losses) on cash flow hedges reclassified from AOCI into the Company's consolidated statements of income for the fiscal years ended September 30, 2018, 2017 and 2016 (in millions):

		Year Ended September 30,		
Derivatives in ASC 815 Cash Flow Hedging Relationships	Location of Gain (Loss) Recognized in Income on Derivative	2018	2017	2016
Foreign currency exchange derivatives	Cost of sales	$ 4	$ 25	$ 9
Foreign currency exchange derivatives	Loss from discontinued operations	—	—	(30)
Commodity derivatives	Cost of sales	12	8	(12)
Forward treasury locks	Net financing charges	—	—	1
Total		$ 16	$ 33	$ (32)

The following table presents the location and amount of pre-tax gains (losses) on fair value hedges recognized in the Company's consolidated statements of income for the fiscal years ended September 30, 2018, 2017 and 2016 (in millions):

		Year Ended September 30,		
Derivatives in ASC 815 Fair Value Hedging Relationships	Location of Gain (Loss) Recognized in Income on Derivative	2018	2017	2016
Interest rate swap	Net financing charges	$ —	$ (1)	$ (5)
Fixed rate debt swapped to floating	Net financing charges	—	2	5
Total		$ —	$ 1	$ —

The following table presents the location and amount of pre-tax gains (losses) on derivatives not designated as hedging instruments recognized in the Company's consolidated statements of income for the fiscal years ended September 30, 2018, 2017 and 2016 (in millions):

		Year Ended September 30,		
Derivatives Not Designated as Hedging Instruments under ASC 815	Location of Gain (Loss) Recognized in Income on Derivative	2018	2017	2016
Foreign currency exchange derivatives	Cost of sales	$ 5	$ (1)	$ (20)
Foreign currency exchange derivatives	Net financing charges	33	44	21
Foreign currency exchange derivatives	Income tax provision	(3)	(3)	4
Foreign currency exchange derivatives	Loss from discontinued operations	—	5	(30)
Equity swap	Selling, general and administrative	(8)	(3)	14
Total		$ 27	$ 42	$ (11)

The pre-tax gains (losses) recorded in foreign currency translation adjustment ("CTA") within other comprehensive income (loss) related to net investment hedges were $45 million, $(138) million and $(82) million for the years ended September 30, 2018, 2017 and 2016, respectively. For the years ended September 30, 2018, 2017 and 2016, no gains or losses were reclassified from CTA into income for the Company's outstanding net investment hedges.

11. FAIR VALUE MEASUREMENTS

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

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

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

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

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

Recurring Fair Value Measurements

The following tables present the Company's fair value hierarchy for those assets and liabilities measured at fair value as of September 30, 2018 and 2017 (in millions):

		Fair Value Measurements Using:		
	Total as of September 30, 2018	Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Other current assets				
Foreign currency exchange derivatives	$ 16	$ —	$ 16	$ —
Commodity derivatives	1	—	1	—
Exchange traded funds (fixed income)[1]	14	14	—	—
Other noncurrent assets				
Investments in marketable common stock	4	4	—	—
Deferred compensation plan assets	100	100	—	—
Exchange traded funds (fixed income)[1]	148	148	—	—
Exchange traded funds (equity)[1]	119	119	—	—
Equity swap	63	—	63	—
Total assets	$ 465	$ 385	$ 80	$ —
Other current liabilities				
Foreign currency exchange derivatives	$ 12	$ —	$ 12	$ —
Commodity derivatives	14	—	14	—
Total liabilities	$ 26	$ —	$ 26	$ —

	Fair Value Measurements Using:			
	Total as of September 30, 2017	Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Other current assets				
Foreign currency exchange derivatives	$ 27	$ —	$ 27	$ —
Commodity derivatives	9	—	9	—
Exchange traded funds (fixed income)[1]	14	14	—	—
Other noncurrent assets				
Investments in marketable common stock	10	10	—	—
Deferred compensation plan assets	92	92	—	—
Exchange traded funds (fixed income)[1]	155	155	—	—
Exchange traded funds (equity)[1]	100	100	—	—
Equity swap	55	—	55	—
Total assets	$ 462	$ 371	$ 91	$ —
Other current liabilities				
Foreign currency exchange derivatives	$ 46	$ —	$ 46	$ —
Commodity derivatives	1	—	1	—
Total liabilities	$ 47	$ —	$ 47	$ —

[1]Classified as restricted investments for payment of asbestos liabilities. See Note 22, "Commitments and Contingencies" of the notes to consolidated financial statements for further details.

Valuation Methods

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

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

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

Deferred compensation plan assets: Assets held in the deferred compensation plans will be used to pay benefits under certain of the Company's non-qualified deferred compensation plans. The investments primarily consist of mutual funds which are publicly traded on stock exchanges and are valued using a market approach based on the quoted market prices.

Investments in marketable common stock and exchange traded funds: Investments in marketable common stock and exchange traded funds are valued using a market approach based on the quoted market prices, where available, or broker/dealer quotes of identical or comparable instruments. The Company recorded unrealized gains of $23 million and unrealized losses of $15 million on these investments as of September 30, 2018 within AOCI in the consolidated statements of financial position. The Company recorded unrealized gains of $10 million and unrealized losses of $6 million as of September 30, 2017 within AOCI in the consolidated statements of financial position. During the fiscal year ended September 30, 2018, the Company sold certain marketable common stock for approximately $3 million. As a result, the Company recorded $2 million of realized gains within selling, general and administrative expenses.

The fair values of cash and cash equivalents, accounts receivable, short-term debt and accounts payable approximate their carrying values. The fair value of long-term debt was $9.6 billion and $12.7 billion at September 30, 2018 and 2017, respectively. The fair value of public debt was $8.6 billion at September 30, 2018 and 2017, which was determined primarily using market quotes classified as Level 1 inputs within the ASC 820 fair value hierarchy. The fair value of other long-term debt was $1.0 billion and $4.1 billion at September 30, 2018 and 2017 respectively, which was determined based on quoted market prices for similar instruments classified as Level 2 inputs within the ASC 820 fair value hierarchy.

12. STOCK-BASED COMPENSATION

On September 2, 2016, the shareholders of the Company approved the Johnson Controls International plc 2012 Share and Incentive Plan (the "Plan"). The original effective date of this Plan was October 1, 2012. The Plan was amended and restated as of November 17, 2014 and was amended and restated again in connection with the Merger that was consummated on September 2, 2016 (the “Amendment Effective Date”). The amendment and restatement is intended to reflect the assumption into this Plan of the remaining share reserves under the Johnson Controls, Inc. 2012 Omnibus Incentive Plan and the Johnson Controls, Inc. 2003 Stock Plan for Outside Directors (the “Legacy Johnson Controls Plans”) as of the Amendment Effective Date. Following the Amendment Effective Date, no further awards may be made under the Legacy Johnson Controls Plans. The types of awards authorized by the Plan comprise of stock options, stock appreciation rights, performance shares, performance units and other stock-based awards. The Compensation Committee of the Company's Board of Directors will determine the types of awards to be granted to individual participants and the terms and conditions of the awards. The Plan provides that 76 million shares of the Company's common stock are reserved for issuance under the 2012 Plan, and 45 million shares remain available for issuance at September 30, 2018.

Pursuant to the Merger Agreement, outstanding stock options held by Tyco employees on September 2, 2016 (the “Merger Date”) were converted into options to acquire the Company's shares using a 0.955-for-one share consolidation ratio in a manner designed to preserve the intrinsic value of such awards. In addition, pursuant to the Merger Agreement, nonvested restricted stock held by Tyco employees on the Merger Date were converted into nonvested restricted stock of the Company using the 0.955-for-one share consolidation ratio in a manner designed to preserve the intrinsic value of such awards. Outstanding performance share awards held by Tyco employees on the Merger Date were converted to nonvested restricted stock of the Company at the target performance level, and adjusted to reflect the 0.955-for-one consolidation ratio. Except for the conversion of stock options, nonvested restricted stock and performance share awards discussed herein, the material terms of the awards remained unchanged. The modifications made to the awards upon the Merger Date constituted modifications under the authoritative guidance for accounting for stock compensation. This guidance requires the Company to revalue the awards upon the Merger close and allocate the revised fair value between purchase consideration and continuing expense based on the ratio of service performed through the Merger Date over the total service period of the awards. The revised fair value allocated to post-merger services resulted in incremental expense which is recognized over the remaining service period of the awards. The portion of Tyco awards earned as of the Merger Date included as purchase consideration was $224 million. The total value of Tyco awards not earned as of the Merger Date was $101 million, which will be expensed over the remaining future vesting period. Refer to Note 2, “Merger Transaction,” of the notes to consolidated financial statements for further information regarding the Merger.

Pursuant to the Merger Agreement, outstanding stock options held by JCI Inc. employees on the Merger Date were converted one-for-one into options to acquire the Company's shares in a manner designed to preserve the intrinsic value of such awards. In addition, pursuant to the Merger Agreement, nonvested restricted stock held by JCI Inc. employees on the Merger Date was converted one-for-one into nonvested restricted stock of the Company in a manner designed to preserve the intrinsic value of such awards. Outstanding performance share awards held by JCI Inc. employees on the Merger Date were converted to nonvested restricted stock of the Company based on certain performance factors. Except for the conversion of stock options, nonvested restricted stock and performance share awards discussed herein, the material terms of the awards remained unchanged, and no incremental fair value resulted from the conversion. References to the Company’s stock throughout Note 12 refer to stock of JCI Inc. prior to the Merger Date and to stock of the Company subsequent to the Merger Date.

In connection with the Adient spin-off, pursuant to the Employee Matters Agreement between the Company and Adient, outstanding stock options and SARs held on October 31, 2016 (the “Spin Date”) by employees remaining with the Company were converted into options and SARs of the Company using a 1.085317-for-one share ratio, which is based on the pre-spin and post-spin closing prices of the Company’s ordinary shares. The exercise prices for options and SARs were converted using the inverse ratio in a manner designed to preserve the intrinsic value of such awards. In addition, pursuant to the Employee Matters Agreement, nonvested restricted stock held on the Spin Date by employees remaining with the Company were converted into nonvested restricted stock of the Company using the 1.085317-for-one share ratio in a manner designed to preserve the intrinsic value of such awards. There were no performance share awards outstanding as of the Spin Date. Employees remaining with the Company did not receive stock-based compensation awards of Adient as a result of the spin-off. Except for the conversion of awards and related exercise prices discussed herein, the material terms of the awards remained unchanged. No incremental fair value resulted from the conversion of the awards; therefore, no additional compensation expense was recorded related to the award modification.

Also in connection with the spin-off transaction, pursuant to the Employee Matters Agreement, employees of Adient were entitled to receive stock-based compensation awards of the Company and Adient in replacement of previously outstanding awards of the Company granted prior to the Spin Date. These awards include stock options, stock appreciation rights and nonvested restricted stock. Upon the Spin Date, the existing awards held by Adient employees were converted into new awards of the Company and

Adient on a pro rata basis and further adjusted based on a formula designed to preserve the intrinsic value of such awards. Additional compensation expense, if any, resulting from the modification of awards held by Adient employees is to be recorded by Adient.

The Company has four share-based compensation plans, which are described below. For the fiscal years ended September 30, 2018 and 2017, compensation cost charged against income for continuing operations, excluding the offsetting impact of outstanding equity swaps, for those plans was approximately $98 million and $134 million, respectively, all of which was recorded in selling, general and administrative expenses. For the fiscal year ended September 30, 2016, compensation cost charged against income for continuing operations, excluding the offsetting impact of outstanding equity swaps, for those plans was approximately $160 million, of which $121 million was recorded in selling, general and administrative expenses and $39 million was recorded in restructuring and impairment costs.

The Company has elected to utilize the alternative transition method for calculating the tax effects of stock-based compensation. The total income tax benefit recognized for continuing operations in the consolidated statements of income for share-based compensation arrangements was approximately $25 million, $53 million and $56 million for the fiscal years ended September 30, 2018, 2017 and 2016, respectively. The tax expense from the exercise and vesting of equity settled awards was $3 million for the fiscal year ended September 30, 2018 and recorded as part of the income tax provision upon adoption of ASU 2016-09 during the first quarter of fiscal 2018. The tax benefit from the exercise and vesting of equity settled awards was $4 million and $11 million for the fiscal years ended 2017 and 2016, respectively, and were recorded in capital in excess of par value. The Company does not settle stock options granted under share-based payment arrangements to cash.

Stock Options

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

The fair value of each option is estimated on the date of grant using a Black-Scholes option valuation model that uses the assumptions noted in the following table. The expected life of options represents the period of time that options granted are expected to be outstanding, assessed separately for executives and non-executives. The risk-free interest rate for periods during the contractual life of the option is based on the U.S. Treasury yield curve in effect at the time of grant. For fiscal 2018, the expected volatility is based on the historical volatility of the Company's stock after the Adient spin-off blended with the historical volatility of certain peer companies' stock prior to the Adient spin-off over the most recent period corresponding to the expected life as of the grant date. For fiscal 2017, the expected volatility is based on historical volatility of certain peer companies over the most recent period corresponding to the expected life as of the grant date. For fiscal 2016, the expected volatility is based on the historical volatility of the Company's stock and other factors. The expected dividend yield is based on the expected annual dividend as a percentage of the market value of the Company's ordinary shares as of the grant date. The Company uses historical data to estimate option exercises and employee terminations within the valuation model.

	Year Ended September 30,		
	2018	2017	2016
Expected life of option (years)	6.5	4.75 & 6.5	6.4
Risk-free interest rate	2.28%	1.23% - 1.93%	1.64% - 1.70%
Expected volatility of the Company's stock	23.70%	24.60%	36.00%
Expected dividend yield on the Company's stock	2.78%	2.21%	2.11%

A summary of stock option activity at September 30, 2018, and changes for the year then ended, is presented below:

	Weighted Average Option Price	Shares Subject to Option	Weighted Average Remaining Contractual Life (years)	Aggregate Intrinsic Value (in millions)
Outstanding, September 30, 2017	$ 32.76	19,730,443		
Granted	37.32	1,376,807		
Exercised	24.24	(2,733,159)		
Forfeited or expired	38.62	(538,029)		
Outstanding, September 30, 2018	$ 34.24	17,836,062	4.2	$ 84
Exercisable, September 30, 2018	$ 31.22	14,329,210	3.3	$ 84

The weighted-average grant-date fair value of options granted during the fiscal years ended September 30, 2018, 2017 and 2016 was $7.04, $7.81 and $13.14, respectively.

The total intrinsic value of options exercised during the fiscal years ended September 30, 2018, 2017 and 2016 was approximately $38 million, $81 million and $39 million, respectively.

In conjunction with the exercise of stock options granted, the Company received cash payments for the fiscal years ended September 30, 2018, 2017 and 2016 of approximately $66 million, $157 million and $70 million, respectively.

At September 30, 2018, the Company had approximately $13 million of total unrecognized compensation cost related to nonvested stock options granted for continuing operations. That cost is expected to be recognized over a weighted-average period of 1.6 years.

Stock Appreciation Rights ("SARs")

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

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

The assumptions used to determine the fair value of the SAR awards at September 30, 2018 were as follows:

Expected life of SAR (years)	0.4 - 5.1
Risk-free interest rate	2.29% - 2.94%
Expected volatility of the Company's stock	23.70%
Expected dividend yield on the Company's stock	2.78%

A summary of SAR activity at September 30, 2018, and changes for the year then ended, is presented below:

	Weighted Average SAR Price	Shares Subject to SAR	Weighted Average Remaining Contractual Life (years)	Aggregate Intrinsic Value (in millions)
Outstanding, September 30, 2017	$ 27.02	893,311		
Granted	25.78	12,119		
Exercised	26.13	(256,900)		
Forfeited or expired	26.09	(21,829)		
Outstanding, September 30, 2018	$ 27.39	626,701	3.2	$ 5
Exercisable, September 30, 2018	$ 26.52	590,556	3.1	$ 5

In conjunction with the exercise of SARs granted, the Company made payments of $3 million, $4 million and $8 million during the fiscal years ended September 30, 2018, 2017 and 2016, respectively.

Restricted (Nonvested) Stock / Units

The Plan provides for the award of restricted stock or restricted stock units to certain employees. These awards are typically share settled unless the employee is a non-U.S. employee or elects to defer settlement until retirement at which point the award would be settled in cash. Restricted awards typically vest over a period of three years from the grant date. The Plan allows for different vesting terms on specific grants with approval by the Board of Directors. The fair value of each share-settled restricted award is based on the closing market value of the Company's ordinary shares on the date of grant. The fair value of each cash-settled restricted award is recalculated at the end of each reporting period based on the closing market value of the Company's ordinary shares at the end of the reporting period, and the liability and expense are adjusted based on the new fair value.

A summary of the status of the Company's nonvested restricted stock awards at September 30, 2018, and changes for the fiscal year then ended, is presented below:

	Weighted Average Price	Shares/Units Subject to Restriction
Nonvested, September 30, 2017	$ 44.48	6,961,706
Granted	37.21	2,274,160
Vested	39.84	(3,819,581)
Forfeited	39.38	(414,768)
Nonvested, September 30, 2018	$ 45.14	5,001,517

At September 30, 2018, the Company had approximately $80 million of total unrecognized compensation cost related to nonvested restricted stock arrangements granted for continuing operations. That cost is expected to be recognized over a weighted-average period of 1.8 years.

Performance Share Awards

The Plan permits the grant of performance-based share unit ("PSU") awards. The PSUs are generally contingent on the achievement of pre-determined performance goals over a three-year performance period as well as on the award holder's continuous employment until the vesting date. The PSUs are also indexed to the achievement of specified levels of total shareholder return versus a peer group over the performance period. Each PSU that is earned will be settled with shares of the Company's ordinary shares following the completion of the performance period, unless the award holder elected to defer a portion or all of the award until retirement which would then be settled in cash.

The fair value of each PSU is estimated on the date of grant using a Monte Carlo simulation that uses the assumptions noted in the following table. The risk-free interest rate for periods during the contractual life of the PSU is based on the U.S. Treasury yield curve in effect at the time of grant. For fiscal 2018, the expected volatility is based on the historical volatility of the Company's stock after the Adient spin-off blended with the historical volatility of certain peer companies' stock prior to the Adient spin-off over the most recent three-year period as of the grant date. For fiscal 2017, the expected volatility is based on historical volatility of certain peer companies over the most recent three-year period as of the grant date.

	Year Ended September 30,	
	2018	2017
Risk-free interest rate	1.92%	1.40%
Expected volatility of the Company's stock	21.70%	21.00%

A summary of the status of the Company's nonvested PSUs at September 30, 2018, and changes for the fiscal year then ended, is presented below:

	Weighted Average Price	Shares/Units Subject to PSU
Nonvested, September 30, 2017	$ 43.24	1,119,388
Granted	37.36	496,478
Forfeited	43.97	(203,576)
Nonvested, September 30, 2018	$ 41.07	1,412,290

13. EARNINGS PER SHARE

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

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

	Year Ended September 30,		
	2018	2017	2016
Income (loss) Available to Ordinary Shareholders			
Income from continuing operations	$ 2,162	$ 1,654	$ 732
Loss from discontinued operations	—	(43)	(1,600)
Basic and diluted income (loss) available to shareholders	$ 2,162	$ 1,611	$ (868)
Weighted Average Shares Outstanding			
Basic weighted average shares outstanding	925.7	935.3	667.4
Effect of dilutive securities:			
Stock options, unvested restricted stock and unvested performance share awards	6.0	9.3	5.2
Diluted weighted average shares outstanding	931.7	944.6	672.6
Antidilutive Securities			
Options to purchase shares	1.5	0.2	—

During the three months ended September 30, 2018 and 2017, the Company declared a dividend of $0.26 and $0.25, respectively, per share. During the twelve months ended September 30, 2018 and 2017, the Company declared four quarterly dividends totaling $1.04 and $1.00, respectively, per share. The company pays all dividends in the month subsequent to the end of each fiscal quarter.

14. EQUITY AND NONCONTROLLING INTERESTS

Share Capital

In September 2016, as a result of the Tyco Merger and further discussed within Note 2, "Merger Transaction," of the notes to consolidated financial statements, each outstanding share of common stock, par value $1.00 per share, of JCI Inc. common stock (other than shares held by JCI Inc., Tyco and certain of their subsidiaries) was converted into the right to receive either cash or share consideration.

The shares outstanding as of the Merger date were calculated as follows (in millions, except share consolidation ratio and per share data):

Pre-merger Tyco shares outstanding	427.2
Share consolidation ratio	0.955
Post-share consolidation Tyco shares	408.0
Johnson Controls, Inc. shares outstanding	638.3
Cash contributed by Tyco used to purchase shares of Johnson Controls, Inc.	$ 3,864
Johnson Controls, Inc. per share consideration	$ 34.88
Reduction in shares due to cash consideration paid by Tyco	(110.8)
Adjusted Johnson Controls, Inc. shares outstanding (1:1 exchange ratio)	527.5
Shares outstanding at September 2, 2016	935.5
Par value	$ 9

Dividends

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

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

Share Repurchase Program

Following the Tyco Merger, the Company adopted, subject to the ongoing existence of sufficient distributable reserves, the existing Tyco International plc $1 billion share repurchase program in September 2016. In December 2017, the Company's Board of Directors approved a $1 billion increase to its share repurchase authorization. The share repurchase program does not have an expiration date and may be amended or terminated by the Board of Directors at any time without prior notice. During fiscal year 2018, the Company repurchased approximately $300 million of its shares. As of September 30, 2018, approximately $1.0 billion remains available under the share repurchase program. In November 2018, the Company's Board of Directors approved a $1 billion increase to its share repurchase authorization. During fiscal year 2017, the Company repurchased approximately $651 million of its shares. There were no shares repurchased between the closing of the Merger and September 30, 2016. Prior to the Merger, during fiscal year 2016, the Company repurchased approximately $501 million of its shares under JCI Inc.'s $3.65 billion share repurchase program.

Other comprehensive income includes activity relating to discontinued operations. The following schedules present changes in consolidated equity attributable to Johnson Controls and noncontrolling interests (in millions, net of tax):

	Equity Attributable to Johnson Controls International plc	Equity Attributable to Noncontrolling Interests	Total Equity
At September 30, 2015	$ 10,335	$ 163	$ 10,498
Total comprehensive income (loss):			
Net income (loss)	(868)	168	(700)
Foreign currency translation adjustments	(105)	9	(96)
Realized and unrealized gains (losses) on derivatives	11	(1)	10
Unrealized losses on marketable securities	(1)	—	(1)
Pension and postretirement plans	(1)	—	(1)
Other comprehensive income (loss)	(96)	8	(88)
Comprehensive income (loss)	(964)	176	(788)
Other changes in equity:			
Result of contribution of Johnson Controls, Inc. to Johnson Controls International plc	15,808	—	15,808
Cash dividends - common stock ($1.16 per share)	(752)	—	(752)
Dividends attributable to noncontrolling interests	—	(93)	(93)
Repurchases of common stock	(501)	—	(501)
Change in noncontrolling interest share	—	726	726
Other, including options exercised	192	—	192
At September 30, 2016	24,118	972	25,090
Total comprehensive income (loss):			
Net income	1,611	164	1,775
Foreign currency translation adjustments	108	(18)	90
Realized and unrealized gains (losses) on derivatives	(14)	1	(13)
Realized and unrealized gains on marketable securities	5	—	5
Other comprehensive income (loss)	99	(17)	82
Comprehensive income	1,710	147	1,857
Other changes in equity:			
Cash dividends - ordinary shares ($1.00 per share)	(938)	—	(938)
Dividends attributable to noncontrolling interests	—	(56)	(56)
Repurchases of ordinary shares	(651)	—	(651)
Change in noncontrolling interest share	—	(5)	(5)
Spin-off of Adient	(4,038)	(138)	(4,176)
Other, including options exercised	246	—	246
At September 30, 2017	20,447	920	21,367
Total comprehensive income (loss):			
Net income	2,162	186	2,348
Foreign currency translation adjustments	(458)	(22)	(480)
Realized and unrealized losses on derivatives	(19)	(1)	(20)
Realized and unrealized gains on marketable securities	4	—	4
Other comprehensive loss	(473)	(23)	(496)
Comprehensive income	1,689	163	1,852
Other changes in equity:			
Cash dividends - ordinary shares ($1.04 per share)	(968)	—	(968)
Dividends attributable to noncontrolling interests	—	(43)	(43)
Repurchases of ordinary shares	(300)	—	(300)
Change in noncontrolling interest share	—	23	23
Adoption of ASU 2016-09	179	—	179
Reclassification from redeemable noncontrolling interest	—	231	231
Other, including options exercised	117	—	117
At September 30, 2018	$ 21,164	$ 1,294	$ 22,458

As previously disclosed, during the quarter ended December 31, 2017, the Company adopted ASU No. 2016-09. As a result, the Company recognized deferred tax assets of $179 million related to certain operating loss carryforwards resulting from the exercise of employee stock options and restricted stock vestings on a modified retrospective basis through a cumulative-effect adjustment to retained earnings as of October 1, 2017.

On October 31, 2016, the Company completed the Adient spin-off. As a result of the spin-off, the Company divested net assets of approximately $4.0 billion.

The equity attributable to Johnson Controls International plc increased by $15.8 billion as a result of the Tyco Merger in fiscal 2016. The increase is primarily due to an increase to equity of $19.7 billion resulting from the total fair value of consideration transferred, partially offset by a decrease of $3.9 billion resulting from cash contributed by Tyco used to purchase shares of Johnson Controls, Inc.

On October 1, 2015, the Company formed a joint venture with Hitachi. In connection with the acquisition, the Company recorded equity attributable to noncontrolling interests of $679 million. Also, in connection with the Tyco Merger, the Company recorded equity attributable to noncontrolling interests of $34 million.

The Company consolidates certain subsidiaries in which the noncontrolling interest party has within their control the right to require the Company to redeem all or a portion of its interest in the subsidiary. The redeemable noncontrolling interests are reported at their estimated redemption value. Any adjustment to the redemption value impacts retained earnings but does not impact net income. Redeemable noncontrolling interests which are redeemable only upon future events, the occurrence of which is not currently probable, are recorded at carrying value. As of September 30, 2018, the Company does not have any subsidiaries for which the noncontrolling interest party has within their control the right to require the Company to redeem any portion of its interests.

The following schedules present changes in the redeemable noncontrolling interests (in millions):

	Year Ended September 30, 2018	Year Ended September 30, 2017	Year Ended September 30, 2016
Beginning balance, September 30	$ 211	$ 234	$ 212
Net income	35	44	48
Foreign currency translation adjustments	(3)	13	2
Realized and unrealized losses on derivatives	(9)	(1)	(1)
Dividends	(3)	(43)	(27)
Reclassification to noncontrolling interest	(231)	—	—
Spin-off of Adient	—	(36)	—
Ending balance, September 30	$ —	$ 211	$ 234

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

	Year Ended September 30, 2018	Year Ended September 30, 2017	Year Ended September 30, 2016
Foreign currency translation adjustments			
Balance at beginning of period	$ (481)	$ (1,152)	$ (1,047)
Aggregate adjustment for the period (net of tax effect of $(3), $1 and $(43)) *	(458)	108	(105)
Adient spin-off impact (net of tax effect of $0)	—	563	—
Balance at end of period	(939)	(481)	(1,152)
Realized and unrealized gains (losses) on derivatives			
Balance at beginning of period	6	4	(7)
Current period changes in fair value (net of tax effect of $(4), $4 and $(5))	(8)	9	(10)
Reclassification to income (net of tax effect of $(5), $(10) and $11) **	(11)	(23)	21
Adient spin-off impact (net of tax effect of $0, $6, and $0)	—	16	—
Balance at end of period	(13)	6	4
Realize and unrealized gains (losses) on marketable securities			
Balance at beginning of period	4	(1)	—
Current period changes in fair value (net of tax effect of $1, $1 and $0)	5	5	(1)
Reclassification to income (net of tax effect of $(1), $0 and $0) ***	(1)	—	—
Balance at end of period	8	4	(1)
Pension and postretirement plans			
Balance at beginning of period	(2)	(4)	(3)
Reclassification to income (net of tax effect of $0) ****	—	—	(1)
Adient spin-off impact (net of tax effect of $0)	—	2	—
Balance at end of period	(2)	(2)	(4)
Accumulated other comprehensive loss, end of period	$ (946)	$ (473)	$ (1,153)

* During fiscal 2018, $12 million of cumulative CTA was recognized as part of the divestiture-related gain recognized as part of the divestiture of Scott Safety.

** Refer to Note 10, "Derivative Instruments and Hedging Activities," of the notes to consolidated financial statements for disclosure of the line items on the consolidated statements of income affected by reclassifications from AOCI into income related to derivatives.

*** During fiscal 2018, the Company sold certain marketable common stock for approximately $3 million. As a result, the Company recorded $2 million of realized gains within selling, general and administrative expenses.

**** Refer to Note 15, "Retirement Plans," of the notes to consolidated financial statements for disclosure of the components of the Company's net periodic benefit costs associated with its defined benefit pension and postretirement plans. For the year ended September 30, 2016 the amounts reclassified from AOCI into income for pension and postretirement plans were primarily recorded in selling, general and administrative expenses on the consolidated statements of income.

15. RETIREMENT PLANS

Pension Benefits

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

For pension plans with accumulated benefit obligations ("ABO") that exceed plan assets, the projected benefit obligation ("PBO"), ABO and fair value of plan assets of those plans were $5,166 million, $5,072 million and $4,525 million, respectively, as of September 30, 2018 and $5,564 million, $5,465 million and $4,715 million, respectively, as of September 30, 2017.

In fiscal 2018, total employer contributions to the defined benefit pension plans were $53 million, of which $18 million were voluntary contributions made by the Company. The Company expects to contribute approximately $85 million in cash to its defined benefit pension plans in fiscal 2019. Projected benefit payments from the plans as of September 30, 2018 are estimated as follows (in millions):

2019	$ 317
2020	304
2021	304
2022	312
2023	316
2024-2028	1,628

Postretirement Benefits

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

Eligibility for coverage is based on meeting certain years of service and retirement age qualifications. These benefits may be subject to deductibles, co-payment provisions and other limitations, and the Company has reserved the right to modify these benefits. Effective January 31, 1994, the Company modified certain U.S. salaried plans to place a limit on the Company's cost of future annual retiree medical benefits at no more than 150% of the 1993 cost.

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

In fiscal 2018, total employer contributions to the postretirement plans were $4 million. The Company expects to contribute approximately $15 million in cash to its postretirement plans in fiscal 2019. Projected benefit payments from the plans as of September 30, 2018 are estimated as follows (in millions):

2019	$ 19
2020	19
2021	19
2022	18
2023	18
2024-2028	74

In December 2003, the U.S. Congress enacted the Medicare Prescription Drug, Improvement and Modernization Act of 2003 ("Act") for employers sponsoring postretirement care plans that provide prescription drug benefits. The Act introduces a prescription drug benefit under Medicare as well as a federal subsidy to sponsors of retiree health care benefit plans providing a benefit that is at least actuarially equivalent to Medicare Part D.1. Under the Act, the Medicare subsidy amount is received directly by the plan sponsor and not the related plan. Further, the plan sponsor is not required to use the subsidy amount to fund postretirement benefits and may use the subsidy for any valid business purpose. Projected subsidy receipts are estimated to be approximately $2 million per year over the next ten years.

Defined Contribution Plans

The Company sponsors various defined contribution savings plans that allow employees to contribute a portion of their pre-tax and/or after-tax income in accordance with plan specified guidelines. Under specified conditions, the Company will contribute to certain savings plans based on predetermined percentages of compensation earned by the employee and/or will match a percentage of the employee contributions up to certain limits. Defined contribution plan contributions charged to expense for continuing and discontinued operations amounted to $205 million, $190 million and $179 million for the fiscal years ended 2018, 2017 and 2016, respectively.

Multiemployer Benefit Plans

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

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

- Assets contributed to the multiemployer benefit plan by one employer may be used to provide benefits to employees of other participating employers.

- If a participating employer stops contributing to the multiemployer benefit plan, the unfunded obligations of the plan may be borne by the remaining participating employers.

- If the Company stops participating in some of its multiemployer benefit plans, the Company may be required to pay those plans an amount based on its allocable share of the underfunded status of the plan, referred to as a withdrawal liability.

The Company participates in approximately 290 multiemployer benefit plans, primarily related to its Building Technologies & Solutions business in the U.S., none of which are individually significant to the Company. The number of employees covered by the Company's multiemployer benefit plans has remained consistent over the past three years, and there have been no significant changes that affect the comparability of fiscal 2018, 2017 and 2016 contributions. The Company recognizes expense for the contractually-required contribution for each period. The Company contributed $68 million, $67 million and $46 million to multiemployer benefit plans in fiscal 2018, 2017 and 2016, respectively.

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

Plan Assets

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

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

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

The Company's plan assets at September 30, 2018 and 2017, by asset category, are as follows (in millions):

Asset Category	Total as of September 30, 2018	Fair Value Measurements Using: Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
U.S. Pension				
Cash and Cash Equivalents	$ 23	$ 2	$ 21	$ —
Equity Securities				
Large-Cap	430	309	121	—
Small-Cap	282	282	—	—
International - Developed	411	365	46	—
International - Emerging	94	80	14	—
Fixed Income Securities				
Government	333	307	26	—
Corporate/Other	1,183	1,119	64	—
Total Investments in the Fair Value Hierarchy	2,756	$ 2,464	$ 292	$ —
Investments Measured at Net Asset Value, as Practical Expedient:				
Real Estate Investments Measured at Net Asset Value*	290			
Total Plan Assets	$ 3,046			
Non-U.S. Pension				
Cash and Cash Equivalents	$ 44	$ 43	$ 1	$ —
Equity Securities				
Large-Cap	235	24	211	—
International - Developed	319	59	260	—
International - Emerging	15	1	14	—
Fixed Income Securities				
Government	830	80	750	—
Corporate/Other	545	301	244	—
Hedge Fund	82	—	82	—
Real Estate	26	26	—	—
Total Investments in the Fair Value Hierarchy	2,096	$ 534	$ 1,562	$ —
Investments Measured at Net Asset Value, as Practical Expedient:				
Real Estate Investments Measured at Net Asset Value*	21			
Total Plan Assets	$ 2,117			
Postretirement				
Cash and Cash Equivalents	$ 13	$ 13	$ —	$ —
Equity Securities				
Large-Cap	26	—	26	—
Small-Cap	8	—	8	—
International - Developed	20	—	20	—
International - Emerging	9	—	9	—
Fixed Income Securities				
Government	20	—	20	—
Corporate/Other	55	—	55	—
Commodities	14	—	14	—
Real Estate	9	—	9	—
Total Plan Assets	$ 174	$ 13	$ 161	$ —

Asset Category	Total as of September 30, 2017	Fair Value Measurements Using: Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
U.S. Pension				
Cash and Cash Equivalents	$ 70	$ 2	$ 68	$ —
Equity Securities				
Large-Cap	652	375	277	—
Small-Cap	281	281	—	—
International - Developed	649	569	80	—
International - Emerging	51	24	27	—
Fixed Income Securities				
Government	270	243	27	—
Corporate/Other	917	851	66	—
Total Investments in the Fair Value Hierarchy	2,890	$ 2,345	$ 545	$ —
Investments Measured at Net Asset Value, as Practical Expedient:				
Real Estate Investments Measured at Net Asset Value*	275			
Total Plan Assets	$ 3,165			
Non-U.S. Pension				
Cash and Cash Equivalents	$ 55	$ 45	$ 10	$ —
Equity Securities				
Large-Cap	242	18	224	—
Mid-Cap	2	2	—	—
International - Developed	517	58	459	—
International - Emerging	13	—	13	—
Fixed Income Securities				
Government	618	74	544	—
Corporate/Other	569	292	277	—
Hedge Fund	112	—	112	—
Real Estate	24	24	—	—
Total Investments in the Fair Value Hierarchy	2,152	$ 513	$ 1,639	$ —
Investments Measured at Net Asset Value, as Practical Expedient:				
Real Estate Investments Measured at Net Asset Value*	29			
Total Plan Assets	$ 2,181			
Postretirement				
Cash and Cash Equivalents	$ 3	$ —	$ 3	$ —
Equity Securities				
Large-Cap	28	—	28	—
Small-Cap	9	—	9	—
International - Developed	21	—	21	—
International - Emerging	11	—	11	—
Fixed Income Securities				
Government	21	—	21	—
Corporate/Other	59	—	59	—
Commodities	15	—	15	—
Real Estate	10	—	10	—
Total Plan Assets	$ 177	$ —	$ 177	$ —

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

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

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

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

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

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

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

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

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

There were no Level 3 assets as of September 30, 2018 or 2017 or any Level 3 asset activity during fiscal 2018 or 2017.

Funded Status

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

	Pension Benefits				Postretirement Benefits	
	U.S. Plans		Non-U.S. Plans			
September 30,	2018	2017	2018	2017	2018	2017
Accumulated Benefit Obligation	$ 3,154	$ 3,382	$ 2,444	$ 2,618	$ —	$ —
Change in Projected Benefit Obligation						
Projected benefit obligation at beginning of year	3,419	4,169	2,721	3,522	214	242
Service cost	15	18	23	32	2	2
Interest cost	105	113	57	48	7	6
Plan participant contributions	—	—	2	3	6	4
Adient spin-off impact	—	(18)	—	(619)	—	(17)
Actuarial (gain) loss	(70)	(131)	(67)	(194)	1	(1)
Amendments made during the year	—	—	—	—	(8)	—
Benefits and settlements paid	(278)	(732)	(130)	(116)	(24)	(25)
Estimated subsidy received	—	—	—	—	1	2
Curtailment	—	—	(2)	(19)	—	—
Other	—	—	(4)	(2)	(1)	—
Currency translation adjustment	—	—	(58)	66	(2)	1
Projected benefit obligation at end of year	$ 3,191	$ 3,419	$ 2,542	$ 2,721	$ 196	$ 214
Change in Plan Assets						
Fair value of plan assets at beginning of year	$ 3,165	$ 3,293	$ 2,181	$ 2,536	$ 177	$ 196
Actual return on plan assets	152	334	69	94	6	14
Adient spin-off impact	—	(16)	—	(440)	—	(13)
Employer and employee contributions	7	286	48	59	15	5
Benefits paid	(153)	(394)	(88)	(86)	(24)	(25)
Settlement payments	(125)	(338)	(42)	(30)	—	—
Other	—	—	(2)	(2)	—	—
Currency translation adjustment	—	—	(49)	50	—	—
Fair value of plan assets at end of year	$ 3,046	$ 3,165	$ 2,117	$ 2,181	$ 174	$ 177
Funded status	$ (145)	$ (254)	$ (425)	$ (540)	$ (22)	$ (37)
Amounts recognized in the statement of financial position consist of:						
Prepaid benefit cost	$ 63	$ 46	$ 26	$ 27	$ 61	$ 64
Accrued benefit liability	(208)	(300)	(451)	(567)	(83)	(101)
Net amount recognized	$ (145)	$ (254)	$ (425)	$ (540)	$ (22)	$ (37)
Weighted Average Assumptions (1)						
Discount rate (2)	4.10%	3.80%	2.45%	2.40%	3.80%	3.70%
Rate of compensation increase	3.50%	3.20%	2.95%	2.90%	NA	NA

(1) Plan assets and obligations are determined based on a September 30 measurement date at September 30, 2018 and 2017.

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

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

Accumulated Other Comprehensive Income

The amounts in AOCI on the consolidated statements of financial position, exclusive of tax impacts, that have not yet been recognized as components of net periodic benefit cost at September 30, 2018 and 2017 related to pension and postretirement benefits are not significant.

The amounts in AOCI expected to be recognized as components of net periodic benefit cost (credit) over the next fiscal related to pension and postretirement benefits are not significant.

Net Periodic Benefit Cost

The table that follows contains the components of net periodic benefit cost (in millions):

	Pension Benefits								
	U.S. Plans			Non-U.S. Plans			Postretirement Benefits		
Year ended September 30,	2018	2017	2016	2018	2017	2016	2018	2017	2016
Components of Net Periodic Benefit Cost (Credit):									
Service cost	$ 15	$ 18	$ 16	$ 23	$ 32	$ 30	$ 2	$ 2	$ 2
Interest cost	105	113	104	57	48	44	7	6	6
Expected return on plan assets	(229)	(229)	(191)	(114)	(92)	(61)	(10)	(10)	(10)
Net actuarial (gain) loss	7	(220)	268	(22)	(195)	237	5	(5)	(2)
Amortization of prior service cost (credit)	—	—	—	—	—	1	—	—	(1)
Curtailment gain	—	—	—	(2)	(19)	—	—	—	—
Settlement (gain) loss	—	(16)	11	—	(1)	6	—	—	—
Net periodic benefit cost (credit)	(102)	(334)	208	(58)	(227)	257	4	(7)	(5)
Net periodic benefit (cost) credit related to discontinued operations	—	—	(1)	—	—	(111)	—	—	(1)
Net periodic benefit cost (credit) included in continuing operations	$ (102)	$ (334)	$ 207	$ (58)	$ (227)	$ 146	$ 4	$ (7)	$ (6)
Expense Assumptions:									
Discount rate	3.80%	3.70%	4.40%	2.40%	1.90%	3.10%	3.70%	3.30%	3.75%
Expected return on plan assets	7.50%	7.50%	7.50%	5.35%	4.60%	4.50%	5.65%	5.60%	5.45%
Rate of compensation increase	3.20%	3.20%	3.25%	2.90%	2.65%	3.30%	NA	NA	NA

16. SIGNIFICANT RESTRUCTURING AND IMPAIRMENT COSTS

To better align its resources with its growth strategies and reduce the cost structure of its global operations in certain underlying markets, the Company commits to restructuring plans as necessary.

In fiscal 2018, the Company committed to a significant restructuring plan (2018 Plan) and recorded $263 million of restructuring and impairment costs in the consolidated statements of income. This was the total amount incurred to date and the total amount expected to be incurred for this restructuring plan. The restructuring actions related to cost reduction initiatives in the Company's Building Technologies & Solutions and Power Solutions businesses and at Corporate. The costs consist primarily of workforce reductions, plant closures and asset impairments. Of the restructuring and impairment costs recorded, $113 million related to the Global Products segment, $56 million related to the Building Solutions EMEA/LA segment, $50 million related to Corporate, $20 million related to the Building Solutions North America segment, $16 million related to the Building Solutions Asia Pacific segment and $8 million related to the Power Solutions segment. The restructuring actions are expected to be substantially complete in 2020.

The following table summarizes the changes in the Company's 2018 Plan reserve, included within other current liabilities in the consolidated statements of financial position (in millions):

	Employee Severance and Termination Benefits	Long-Lived Asset Impairments	Other	Total
Original reserve	$ 209	$ 42	$ 12	$ 263
Utilized—cash	(45)	—	(2)	(47)
Utilized—noncash	—	(42)	—	(42)
Balance at September 30, 2018	$ 164	$ —	$ 10	$ 174

In fiscal 2017, the Company committed to a significant restructuring plan (2017 Plan) and recorded $367 million of restructuring and impairment costs in the consolidated statements of income. This is the total amount incurred to date and the total amount expected to be incurred for this restructuring plan. The restructuring actions related to cost reduction initiatives in the Company's Building Technologies & Solutions and Power Solutions businesses and at Corporate. The costs consist primarily of workforce reductions, plant closures and asset impairments. Of the restructuring and impairment costs recorded, $166 million related to Corporate, $74 million related to the Building Solutions EMEA/LA segment, $59 million related to the Building Solutions North America segment, $32 million related to the Global Products segment, $20 million related to the Power Solutions segment and $16 million related to the Building Solutions Asia Pacific segment. The restructuring actions are expected to be substantially complete in fiscal 2019.

The following table summarizes the changes in the Company's 2017 Plan reserve, included within other current liabilities in the consolidated statements of financial position (in millions):

	Employee Severance and Termination Benefits	Long-Lived Asset Impairments	Other	Currency Translation	Total
Original Reserve	$ 276	$ 77	$ 14	$ —	$ 367
Utilized—cash	(75)	—	—	—	(75)
Utilized—noncash	—	(77)	(1)	—	(78)
Adjustment to restructuring reserves	25	—	—	—	25
Balance at September 30, 2017	$ 226	$ —	$ 13	$ —	$ 239
Utilized—cash	(152)	—	(6)	—	(158)
Utilized—noncash	—	—	—	(1)	(1)
Balance at September 30, 2018	$ 74	$ —	$ 7	$ (1)	$ 80

In fiscal 2016, the Company committed to a significant restructuring plan (2016 Plan) and recorded $288 million of restructuring and impairment costs in the consolidated statements of income. The restructuring actions related to cost reduction initiatives in the Company's Building Technologies & Solutions and Power Solutions businesses and at Corporate. The costs consist primarily of workforce reductions, plant closures, asset impairments and change-in-control payments. Of the restructuring and impairment costs recorded, $161 million related to Corporate, $66 million related to the Power Solutions segment, $44 million related to the Global Products segment and $17 million related to the Building Solutions EMEA/LA segment. The restructuring actions are expected to be substantially complete in fiscal 2019. Included in the reserve is $56 million of committed restructuring actions taken by Tyco for liabilities assumed as part of the Tyco acquisition.

Additionally, the Company recorded $332 million of restructuring and impairment costs within discontinued operations related to Adient in fiscal 2016.

The following table summarizes the changes in the Company's 2016 Plan reserve, included within other current liabilities in the consolidated statements of financial position (in millions):

	Employee Severance and Termination Benefits	Long-Lived Asset Impairments	Other	Currency Translation	Total
Original Reserve	$ 368	$ 190	$ 62	$ —	$ 620
Acquired Tyco restructuring reserves	78	—	—	—	78
Utilized—cash	(32)	—	—	—	(32)
Utilized—noncash	—	(190)	(32)	1	(221)
Balance at September 30, 2016	$ 414	$ —	$ 30	$ 1	$ 445
Adient spin-off impact	(194)	—	(22)	—	(216)
Utilized—cash	(86)	—	(2)	—	(88)
Utilized—noncash	—	—	—	1	1
Adjustment to restructuring reserves	(25)	—	—	—	(25)
Transfer to liabilities held for sale	(3)	—	—	—	(3)
Adjustment to acquired Tyco restructuring reserves	(22)	—	—	—	(22)
Balance at September 30, 2017	$ 84	$ —	$ 6	$ 2	$ 92
Utilized—cash	(17)	—	(2)	—	(19)
Balance at September 30, 2018	$ 67	$ —	$ 4	$ 2	$ 73

The Company's fiscal 2018, 2017 and 2016 restructuring plans included workforce reductions of approximately 11,500 employees (9,100 for the Building Technologies & Solutions business, 2,200 for Corporate and 200 for Power Solutions). Restructuring charges associated with employee severance and termination benefits are paid over the severance period granted to each employee or on a lump sum basis in accordance with individual severance agreements. As of September 30, 2018, approximately 4,900 of the employees have been separated from the Company pursuant to the restructuring plans. In addition, the restructuring plans included twelve plant closures in the Building Technologies & Solutions business. As of September 30, 2018, seven of the twelve plants have been closed.

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

17. IMPAIRMENT OF LONG-LIVED ASSETS

The Company reviews long-lived assets, including tangible assets and other intangible assets with definitive lives, for impairment whenever events or changes in circumstances indicate that the asset's carrying amount may not be recoverable. The Company conducts its long-lived asset impairment analyses in accordance with ASC 360-10-15, "Impairment or Disposal of Long-Lived Assets," ASC 350-30, "General Intangibles Other than Goodwill" and ASC 985-20, "Costs of software to be sold, leased, or marketed." ASC 360-10-15 requires the Company to group assets and liabilities at the lowest level for which identifiable cash flows are largely independent of the cash flows of other assets and liabilities and evaluate the asset group against the sum of the undiscounted future cash flows. If the undiscounted cash flows do not indicate the carrying amount of the asset group is recoverable, an impairment charge is measured as the amount by which the carrying amount of the asset group exceeds its fair value based on discounted cash flow analysis or appraisals. ASC 350-30 requires intangible assets acquired in a business combination that are used in research and development activities be considered indefinite lived until the completion or abandonment of the associated research and development efforts. During the period that those assets are considered indefinite lived, they shall not be amortized but shall be tested for impairment annually and more frequently if events or changes in circumstances indicate that it is more likely than not that the asset is impaired. If the carrying amount of an intangible asset exceeds its fair value, an entity shall recognize an impairment loss in an amount equal to that excess. ASC 985-20 requires the unamortized capitalized costs of a computer software product be compared to the net realizable value of that product. The amount by which the unamortized capitalized costs of a computer software product exceed the net realizable value of that asset shall be written off.

In fiscal 2018, the Company concluded it had a triggering event requiring assessment of impairment for certain of its long-lived assets in conjunction with its restructuring actions announced in fiscal 2018. As a result, the Company reviewed the long-lived assets for impairment and recorded $42 million of asset impairment charges within restructuring and impairment costs in the consolidated statements of income. Of the total impairment charges, $31 million related to the Global Products segment, $6 million related to the Power Solutions segment and $5 million related to Corporate assets. Refer to Note 16, "Significant Restructuring and Impairment Costs," of the notes to consolidated financial statements for additional information. The impairments were measured under a market approach utilizing an appraisal to determine fair values of the impaired assets. This method is consistent with the methods the Company employed in prior periods to value other long-lived assets. The inputs utilized in the analyses are classified as Level 3 inputs within the fair value hierarchy as defined in ASC 820, "Fair Value Measurement."

In fiscal 2017, the Company concluded it had triggering events requiring assessment of impairment for certain of its long-lived assets in conjunction with its restructuring actions announced in fiscal 2017. As a result, the Company reviewed the long-lived assets for impairment and recorded $77 million of asset impairment charges within restructuring and impairment costs on the consolidated statements of income. Of the total impairment charges, $30 million related to the Building Solutions North America segment, $20 million related to the Global Products segment, $19 million related to Corporate assets, $7 million related to the Power Solutions segment and $1 million related to the Building Solutions Asia Pacific segment. Refer to Note 16, "Significant Restructuring and Impairment Costs," of the notes to consolidated financial statements for additional information. The impairments were measured, depending on the asset, under either an income approach utilizing forecasted discounted cash flows or a market approach utilizing an appraisal to determine fair values of the impaired assets. These methods are consistent with the methods the Company employed in prior periods to value other long-lived assets. The inputs utilized in the analyses are classified as Level 3 inputs within the fair value hierarchy as defined in ASC 820, "Fair Value Measurement."

In fiscal 2016, the Company concluded it had triggering events requiring assessment of impairment for certain of its long-lived assets in conjunction with its restructuring actions announced in fiscal 2016. As a result, the Company reviewed the long-lived assets for impairment and recorded $103 million of asset impairment charges within restructuring and impairment costs on the consolidated statements of income. Of the total impairment charges, $64 million related to the Power Solutions segment, $24 million related to Corporate assets, $8 million related to the Global Products segment, $4 million related to the Building Solutions Asia Pacific segment and $3 million related to the Building Solutions EMEA/LA segment. In addition, the Company recorded $87 million of asset impairments within discontinued operations related to Adient in fiscal 2016. Refer to Note 16, "Significant Restructuring and Impairment Costs," of the notes to consolidated financial statements for additional information. The impairments were measured, depending on the asset, under either an income approach utilizing forecasted discounted cash flows or a market approach utilizing an appraisal to determine fair values of the impaired assets. These methods are consistent with the methods the Company employed in prior periods to value other long-lived assets. The inputs utilized in the analyses are classified as Level 3 inputs within the fair value hierarchy as defined in ASC 820, "Fair Value Measurement."

At September 30, 2018, 2017 and 2016, the Company concluded it did not have any other triggering events requiring assessment of impairment of its long-lived assets. Refer to Note 1, "Summary of Significant Accounting Policies," and Note 7, "Goodwill and Other Intangible Assets," of the notes to consolidated financial statements for discussion of the Company's goodwill impairment testing.

18. INCOME TAXES

For fiscal 2018 and 2017, the more significant components of the Company's income tax provision from continuing operations are as follows (in millions):

	Year Ended September 30,	
	2018	2017
Tax expense at Ireland statutory rate	$ 363	$ 320
U.S. state income tax, net of federal benefit	24	23
Income subject to the U.S. federal tax rate	16	(188)
Income subject to rates different than the statutory rate	(164)	256
Reserve and valuation allowance adjustments	31	(164)
Impact of acquisitions and divestitures	145	475
U.S. Tax Reform discrete items	108	—
Restructuring and impairment costs	(5)	(17)
Income tax provision	$ 518	$ 705

The statutory tax rate in Ireland is being used as a comparison since the Company is domiciled in Ireland. The effective rate is above the statutory rate of 12.5% for fiscal 2018 primarily due to the discrete net impacts of U.S. Tax Reform, final income tax effects of the completed divestiture of the Scott Safety business, legal entity restructuring associated with the Power Solutions business, valuation allowance adjustments and tax rate differentials, partially offset by the benefits of continuing global tax planning initiatives, tax audit closures and tax benefits due to changes in entity tax status. The effective rate is above the statutory rate of 12.5% for fiscal 2017 primarily due to the establishment of a deferred tax liability on the outside basis difference of the Company's investment in certain subsidiaries related to the divestiture of the Scott Safety business, the income tax effects of pension mark-to-market gains and tax rate differentials, partially offset by the jurisdictional mix of significant restructuring and impairment costs, Tyco Merger transaction and integration costs, purchase accounting adjustments, tax audit closures, a tax benefit due to changes in entity tax status and the benefits of continuing global tax planning initiatives.

For fiscal 2016, the more significant components of the Company's income tax provision from continuing operations are as follows (in millions):

	Year Ended September 30,
	2016
Tax expense at U.S. federal statutory rate	$ 371
State income taxes, net of federal benefit	(6)
Foreign income tax expense at different rates and foreign losses without tax benefits	(122)
U.S. tax on foreign income	(194)
U.S. credits and incentives	(14)
Impact of acquisitions and divestitures	163
Restructuring and impairment costs	28
Other	(29)
Income tax provision	$ 197

The U.S. federal statutory tax rate is being used as a comparison since the Company was a U.S. domiciled company for 11 months of fiscal 2016. The effective rate is below the U.S. statutory rate for fiscal 2016 primarily due to the benefits of continuing global tax planning initiatives and foreign tax rate differentials, partially offset by the jurisdictional mix of restructuring and impairment costs, and the tax impacts of the Merger and integration related costs.

Valuation Allowances

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

In the fourth quarter of fiscal 2018, the Company performed an analysis related to the realizability of its worldwide deferred tax assets. As a result, and after considering feasible tax planning initiatives and other positive and negative evidence, the Company determined that it was more likely than not that certain deferred tax assets primarily within Germany would not be realized. Therefore, the Company recorded $56 million of valuation allowances as income tax expense in the three month period ended September 30, 2018.

In the fourth quarter of fiscal 2017, the Company performed an analysis related to the realizability of its worldwide deferred tax assets. As a result, and after considering tax planning initiatives and other positive and negative evidence, the Company determined that it was more likely than not that certain deferred tax assets primarily in Canada, China and Mexico would not be able to be realized, and it was more likely than not that certain deferred tax assets in Germany would be realized. Therefore, the Company recorded $27 million of net valuation allowances as income tax expense in the three month period ended September 30, 2017.

As a result of the Tyco Merger in the fourth quarter of fiscal 2016, the Company recorded as part of the acquired liabilities of Tyco $2.4 billion of valuation allowances. Also in the fourth quarter of fiscal 2016, the Company performed an analysis related to the realizability of its worldwide deferred tax assets. As a result, and after considering tax planning initiatives and other positive and negative evidence, the Company determined that no other material changes were needed to its valuation allowances. Therefore, there was no impact to income tax expense due to valuation allowance changes in the three month period or year ended September 30, 2016.

Uncertain Tax Positions

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

At September 30, 2018, the Company had gross tax effected unrecognized tax benefits for continuing operations of $2,379 million of which $2,246 million, if recognized, would impact the effective tax rate. Total net accrued interest at September 30, 2018 was approximately $119 million (net of tax benefit).

At September 30, 2017, the Company had gross tax effected unrecognized tax benefits for continuing operations of $2,173 million of which $2,047 million, if recognized, would impact the effective tax rate. Total net accrued interest at September 30, 2017 was approximately $99 million (net of tax benefit).

At September 30, 2016, the Company had gross tax effected unrecognized tax benefits for continuing operations of $1,706 million of which $1,604 million, if recognized, would impact the effective tax rate. Total net accrued interest at September 30, 2016 was approximately $84 million (net of tax benefit).

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

	Year Ended September 30,		
	2018	2017	2016
Beginning balance, October 1	$ 2,173	$ 1,706	$ 1,052
Additions for tax positions related to the current year	444	613	442
Additions for tax positions of prior years	7	116	15
Reductions for tax positions of prior years	(201)	(44)	(66)
Settlements with taxing authorities	(19)	(95)	(104)
Statute closings and audit resolutions	(25)	(264)	(30)
Acquisition of business	—	141	397
Ending balance, September 30	$ 2,379	$ 2,173	$ 1,706

During fiscal 2018, the Company settled tax examinations impacting fiscal years 2010 to fiscal 2012 which resulted in a $25 million net benefit to income tax expense.

During fiscal 2017, the Company settled a significant number of tax examinations impacting fiscal years 2006 to fiscal 2014. In the fourth quarter of fiscal 2017, income tax audit resolutions resulted in a net $191 million benefit to income tax expense.

In the U.S., fiscal years 2015 through 2016 are currently under exam by the Internal Revenue Service ("IRS") for certain legal entities. Additionally, the Company is currently under exam in the following major non-U.S. jurisdictions for continuing operations:

Tax Jurisdiction	Tax Years Covered
Belgium	2015 - 2017
China	2008 - 2016
France	2010 - 2012; 2015-2016
Germany	2007 - 2016
Spain	2010 - 2012
United Kingdom	2012 - 2015

It is reasonably possible that certain tax examinations and/or tax litigation will conclude within the next twelve months, which could have a material impact to tax expense.

Other Tax Matters

In the fourth quarter of fiscal 2018, the Company recorded a tax benefit of $139 million due to changes in entity tax status.

In the fourth quarter of fiscal 2018, the Company recorded a tax charge of $129 million due to legal entity restructuring associated with the Power Solutions business.

In the first quarter of fiscal 2018, the Company completed the sale of its Scott Safety business to 3M Company. In connection with the sale, the Company recorded a pre-tax gain of $114 million and income tax expense of $30 million. In addition, during fiscal 2017, the Company recorded a discrete non-cash tax charge of $490 million related to establishment of a deferred tax liability on the outside basis difference of the Company's investment in certain subsidiaries of the Scott Safety business. Refer to Note 3, "Acquisitions and Divestitures," and Note 4, "Discontinued Operations," of the notes to consolidated financial statements for additional information.

During fiscal 2018 and 2017, the Company recorded transaction and integration costs of $234 million and $428 million, respectively. These costs generated tax benefits of $27 million and $69 million, respectively, which reflects the Company’s current tax position in these jurisdictions.

During fiscal 2018, 2017 and 2016, the Company incurred significant charges for restructuring and impairment costs of $263 million, $367 million and $288 million, respectively. Refer to Note 16, "Significant Restructuring and Impairment Costs," of the notes to consolidated financial statements for additional information. These costs generated tax benefits of $38 million, $63 million and $76 million, respectively, which reflects the Company’s current tax position in these jurisdictions.

During fiscal 2018, 2017 and 2016, the Company recorded pension mark-to-market gains (losses) of $10 million, $420 million and $(393) million, respectively. These gains generated tax expense (benefit) of $(3) million, $126 million and $(119) million, respectively, which reflects the Company's current tax position in these jurisdictions.

In the fourth quarter of fiscal 2017, the Company recorded a tax charge of $53 million due to a change in the deferred tax liability related to the outside basis of certain nonconsolidated subsidiaries.

In the first quarter of fiscal 2017, the Company recorded a discrete tax benefit of $101 million due to changes in entity tax status.

During the fourth quarter of fiscal 2016, the Company completed its Merger with Tyco. As a result of that transaction, the Company incurred incremental tax expense of $137 million. In preparation for the spin-off of the Automotive Experience business in the first quarter of fiscal 2017, the Company incurred incremental tax expense for continuing operations of $26 million in fiscal 2016.

As a result of the Tyco Merger in the fourth quarter of fiscal 2016, the Company recorded as part of the acquired liabilities of Tyco $290 million of post sale contingent tax indemnification liabilities which is generally recorded within other noncurrent liabilities in the consolidated statements of financial position. The liabilities are recorded at fair value and relate to certain tax related matters borne by the buyer of previously divested subsidiaries of Tyco which Tyco has indemnified certain parties and the amounts are probable of being paid. At September 30, 2018 and 2017, the Company recorded liabilities of $255 million and $290 million, respectively. Of the $255 million recorded as of September 30, 2018, $235 million is related to prior divested businesses and the remainder relates to Tyco's tax sharing agreements from its 2007 and 2012 spin-off transactions. These are certain guarantees or indemnifications extended among Tyco, Medtronic, TE Connectivity, ADT and Pentair in accordance with the terms of the 2007 and 2012 separation and tax sharing agreements.

Impacts of Tax Legislation and Change in Statutory Tax Rates

On December 22, 2017, the "Tax Cuts and Jobs Act" (H.R. 1) was enacted and significantly revises U.S. corporate income tax by, among other things, lowering corporate income tax rates, imposing a one-time transition tax on deemed repatriated earnings of non-U.S. subsidiaries, and implementing a territorial tax system and various base erosion minimum tax provisions.

In connection with the Company's analysis of the impact of the U.S. tax law changes, which is provisional and subject to change, the Company recorded a net tax charge of $108 million during fiscal 2018. This provisional net tax charge arises from a benefit of $108 million due to the remeasurement of U.S. deferred tax assets and liabilities, offset by the Company's tax charge relating to the one-time transition tax on deemed repatriated earnings, inclusive of all relevant taxes, of $216 million. The Company's estimated benefit of the remeasurement of U.S. deferred tax assets and liabilities increased from $101 million as of December 31, 2017 to $108 million as of September 30, 2018 due to calculation refinement of the Company's estimated impact. The Company remeasured certain deferred tax assets and liabilities based on the rates at which they are expected to reverse in the future. The Company's tax charge for transition tax decreased from $305 million as of December 31, 2017 to $216 million as of September 30, 2018 due to further analysis of the Company's post-1986 non-U.S. earnings and profits ("E&P") previously deferred from U.S. federal taxation and refinement of the estimated impact of tax law changes.

Based on the effective dates of certain aspects of the U.S. tax law changes, various applicable impacts of the enacted legislation could not be finalized as of September 30, 2018. While the Company made reasonable estimates of the impact of the transition tax, the final impact of the U.S. tax law changes may differ from these estimated impacts, due to, future treasury regulations, tax law technical corrections, notices, rulings, refined computations, and other items. The Company will finalize such provisional amounts within the time period prescribed by Staff Accounting Bulletin 118.

During the fiscal years ended 2018, 2017 and 2016, other tax legislation was adopted in various jurisdictions. These law changes did not have a material impact on the Company's consolidated financial statements.

Continuing Operations

Components of the provision for income taxes on continuing operations were as follows (in millions):

	Year Ended September 30,		
	2018	2017	2016
Current			
U.S. federal	$ 515	$ (225)	$ 169
U.S. state	34	(6)	5
Non-U.S.	605	373	788
	1,154	142	962
Deferred			
U.S. federal	(284)	593	(321)
U.S. state	(11)	41	(15)
Non-U.S.	(341)	(71)	(429)
	(636)	563	(765)
Income tax provision	$ 518	$ 705	$ 197

Consolidated U.S. income from continuing operations before income taxes and noncontrolling interests for the fiscal years ended September 30, 2018, 2017 and 2016 was income of $773 million, $868 million and $943 million, respectively. Consolidated non-U.S. income from continuing operations before income taxes and noncontrolling interests for the fiscal years ended September 30, 2018, 2017 and 2016 was income of $2,128 million, $1,690 million and $119 million, respectively.

Income taxes paid for the fiscal years ended September 30, 2018, 2017 and 2016 were $517 million, $1,756 million and $1,388 million, respectively. At September 30, 2018 and 2017, the Company recorded within the consolidated statements of financial position in other current liabilities approximately $336 million and $625 million, respectively, of accrued income tax liabilities.

The Company has not provided U.S. or non-U.S. income taxes on approximately $19.5 billion of outside basis differences of consolidated subsidiaries of Johnson Controls International plc. The Company is indefinitely reinvested in these basis differences. The reduction of the outside basis differences via the sale or liquidation of these subsidiaries and/or distributions could create taxable income. The Company's intent is to reduce the outside basis differences only when it would be tax efficient. Given the numerous ways in which the basis differences may be reduced, it is not practicable to estimate the amount of unrecognized withholding taxes and deferred tax liability on the outside basis differences. In fiscal 2018, due to U.S. Tax Reform, the Company provided income tax related to the change in the Company’s assertion over the outside basis difference of certain non-U.S. subsidiaries owned directly or indirectly by U.S. subsidiaries. Under U.S. Tax Reform, the U.S. has enacted a tax system that provides an exemption for dividends received by U.S. corporations from 10% or more owned non-U.S. corporations. However, certain non-U.S, U.S. state and withholding taxes may still apply when closing an outside basis difference via distribution or other transactions.

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

	September 30,	
	2018	2017
Other noncurrent assets	1,591	2,360
Other noncurrent liabilities	(763)	(1,733)
Net deferred tax asset	$ 828	$ 627

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

	September 30, 2018	September 30, 2017
Deferred tax assets		
Accrued expenses and reserves	$ 490	$ 891
Employee and retiree benefits	193	373
Net operating loss and other credit carryforwards	6,510	5,130
Research and development	93	188
Other, net	—	26
	7,286	6,608
Valuation allowances	(5,195)	(3,838)
	2,091	2,770
Deferred tax liabilities		
Property, plant and equipment	172	247
Subsidiaries, joint ventures and partnerships	306	789
Intangible assets	713	1,107
Other, net	72	—
	1,263	2,143
Net deferred tax asset	$ 828	$ 627

At September 30, 2018, the Company had available net operating loss carryforwards of approximately $24.3 billion, of which $13.5 billion will expire at various dates between 2019 and 2038, and the remainder has an indefinite carryforward period. The Company had available U.S. foreign tax credit carryforwards at September 30, 2018 of $624 million which may be carried back to fiscal period 2016 or which will otherwise expire at various dates between 2020 and 2024. The valuation allowance, generally, is for loss carryforwards for which realization is uncertain because it is unlikely that the losses will be realized given the lack of sustained profitability and/or limited carryforward periods in certain countries.

During the first quarter of 2018, the Company adopted ASU 2016-09. As a result, the Company recognized deferred tax assets of $179 million in the consolidated statements of financial position related to certain operating loss carryforwards resulting from the exercise of employee stock options and restricted stock vestings on a modified retrospective basis through a cumulative-effect adjustment to retained earnings as of October 1, 2017.

19. SEGMENT INFORMATION

ASC 280, "Segment Reporting," establishes the standards for reporting information about segments in financial statements. In applying the criteria set forth in ASC 280, the Company has determined that it has five reportable segments for financial reporting purposes. The Company’s five reportable segments are presented in the context of its two primary businesses - Building Technologies & Solutions and Power Solutions.

Building Technologies & Solutions

- Building Solutions North America designs, sells, installs, and services HVAC and controls systems, integrated electronic security systems (including monitoring), and integrated fire detection and suppression systems for commercial, industrial, retail, small business, institutional and governmental customers in North America. Building Solutions North America also provides energy efficiency solutions and technical services, including inspection, scheduled maintenance, and repair and replacement of mechanical and control systems, to non-residential building and industrial applications in the North American marketplace.

- Building Solutions EMEA/LA designs, sells, installs, and services HVAC, controls, refrigeration, integrated electronic security, integrated fire detection and suppression systems, and provides technical services to markets in Europe, the Middle East, Africa and Latin America.

- Building Solutions Asia Pacific designs, sells, installs, and services HVAC, controls, refrigeration, integrated electronic security, integrated fire detection and suppression systems, and provides technical services to the Asia Pacific marketplace.

- Global Products designs and produces heating and air conditioning for residential and commercial applications, and markets products and refrigeration systems to replacement and new construction market customers globally. The Global Products business also designs, manufactures and sells fire protection and security products, including intrusion security, anti-theft devices, and access control and video management systems, for commercial, industrial, retail, residential, small business, institutional and governmental customers worldwide. Global Products also includes the Johnson Controls-Hitachi joint venture, which was formed October 1, 2015, and included the Scott Safety business, prior to its sale on October 4, 2017.

Power Solutions

Power Solutions services both automotive original equipment manufacturers and the battery aftermarket by providing advanced battery technology, coupled with systems engineering, marketing and service expertise.

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

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

	Year Ended September 30,		
	2018	2017	2016
Net Sales			
Building Technologies & Solutions			
Building Solutions North America	$ 8,679	$ 8,341	$ 4,687
Building Solutions EMEA/LA	3,696	3,595	1,613
Building Solutions Asia Pacific	2,553	2,444	1,736
Global Products	8,472	8,455	6,148
	23,400	22,835	14,184
Power Solutions	8,000	7,337	6,653
Total net sales	$ 31,400	$ 30,172	$ 20,837

	Year Ended September 30,		
	2018	2017	2016
Segment EBITA			
Building Technologies & Solutions			
Building Solutions North America (1)	$ 1,109	$ 1,039	$ 494
Building Solutions EMEA/LA (2)	344	290	74
Building Solutions Asia Pacific (3)	347	323	222
Global Products (4)	1,338	1,179	637
	3,138	2,831	1,427
Power Solutions (5)	1,417	1,427	1,327
Total segment EBITA	$ 4,555	$ 4,258	$ 2,754
Amortization of intangible assets	(384)	(489)	(116)
Corporate expenses (6)	(576)	(768)	(607)
Net financing charges	(441)	(496)	(289)
Restructuring and impairment costs	(263)	(367)	(288)
Net mark-to-market adjustments on pension and postretirement plans	10	420	(393)
Income from continuing operations before income taxes	$ 2,901	$ 2,558	$ 1,061

	September 30,		
	2018	2017	2016
Assets			
Building Technologies & Solutions (7)			
Building Solutions North America (8)	$ 15,384	$ 15,228	$ 15,554
Building Solutions EMEA/LA (9)	4,997	4,885	4,649
Building Solutions Asia Pacific (10)	2,743	2,575	2,521
Global Products (11)	14,261	14,018	15,782
	37,385	36,706	38,506
Power Solutions (12)	7,996	7,894	6,793
Assets held for sale	—	2,109	13,186
Unallocated	3,416	5,175	4,694
Total	$ 48,797	$ 51,884	$ 63,179

	Year Ended September 30,		
	2018	2017	2016
Depreciation/Amortization			
Building Technologies & Solutions			
Building Solutions North America	$ 236	$ 272	$ 49
Building Solutions EMEA/LA	110	140	14
Building Solutions Asia Pacific	28	37	11
Global Products	390	410	230
	764	859	304
Power Solutions	256	236	238
Corporate	65	64	80
Discontinued Operations	—	29	331
Total	$ 1,085	$ 1,188	$ 953

	Year Ended September 30,		
	2018	2017	2016
Capital Expenditures			
Building Technologies & Solutions			
Building Solutions North America	$ 114	$ 107	$ 16
Building Solutions EMEA/LA	73	98	19
Building Solutions Asia Pacific	26	27	7
Global Products	307	421	304
	520	653	346
Automotive Experience			
Seating	—	62	392
Interiors	—	1	3
	—	63	395
Power Solutions	372	481	357
Corporate	138	146	151
Total	$ 1,030	$ 1,343	$ 1,249

(1) Building Solutions North America segment EBITA for the year ended September 30, 2018 and 2017 excludes $20 million and $59 million, respectively, of restructuring and impairment costs.

(2) Building Solutions EMEA/LA segment EBITA for the years ended September 30, 2018, 2017 and 2016 excludes $56 million, $74 million and $17 million, respectively, of restructuring and impairment costs. For the years ended September 30, 2018, 2017 and 2016, EMEA/LA segment EBITA includes $1 million, $5 million and $11 million, respectively, of equity income.

(3) Building Solutions Asia Pacific segment EBITA for the year ended September 30, 2018 and 2017 excludes $16 million and $16 million, respectively, of restructuring and impairment costs. For the years ended September 30, 2018, 2017 and 2016, Asia Pacific segment EBITA includes $1 million, $1 million and $1 million, respectively, of equity income.

(4) Global Products segment EBITA for the years ended September 30, 2018, 2017 and 2016 excludes $113 million, $32 million and $44 million, respectively, of restructuring and impairment costs. For the years ended September 30, 2018, 2017 and 2016, Global Products segment EBITA includes $175 million, $151 million and $114 million, respectively, of equity income.

(5) Power Solutions segment EBITA for the years ended September 30, 2018, 2017 and 2016 excludes $8 million, $20 million and $66 million, respectively, of restructuring and impairment costs. For the years ended September 30, 2018, 2017 and 2016, Power Solutions segment EBITA includes $58 million, $83 million and $48 million, respectively, of equity income.

(6) Corporate expenses for the years ended September 30, 2018, 2017 and 2016 excludes $50 million, $166 million and $161 million, respectively, of restructuring and impairment costs.

(7) Prior year amounts exclude assets held for sale. Refer to Note 4, "Discontinued Operations," of the notes to consolidated financial statements for further information regarding the Company's disposal groups classified as held for sale.

(8) Buildings Solutions North America assets as of September 2018, 2017 and 2016, include $8 million, $8 million and $7 million, respectively, of investments in partially-owned affiliates.

(9) Building Solutions EMEA/LA assets as of September 30, 2018, 2017 and 2016, include $99 million, $107 million and $103 million, respectively, of investments in partially-owned affiliates.

(10) Building Solutions Asia Pacific assets as of September 30, 2018 include $1 million of investments in partially-owned affiliates.

(11) Global Products assets as of September 30, 2018, 2017 and 2016, include $740 million, $629 million and $513 million, respectively, of investments in partially-owned affiliates.

(12) Power Solutions assets as of September 30, 2018, 2017 and 2016, include $453 million, $447 million and $367 million, respectively, of investments in partially-owned affiliates.

In fiscal years 2018, 2017 and 2016, no customer exceeded 10% of consolidated net sales.

Geographic Segments

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

	Year Ended September 30,		
	2018	2017	2016
Net Sales			
United States	$ 14,625	$ 14,495	$ 9,633
China	2,166	2,046	1,620
Japan	1,903	1,816	1,805
Germany	1,961	1,779	1,430
United Kingdom	1,139	928	291
Mexico	909	840	639
Other foreign	5,692	5,408	3,602
Other European countries	3,005	2,860	1,817
Total	$ 31,400	$ 30,172	$ 20,837
Long-Lived Assets (Year-end)			
United States	$ 3,216	$ 3,155	$ 2,880
China	766	535	484
Japan	209	180	188
Germany	275	290	287
United Kingdom	73	109	103
Mexico	531	489	457
Other foreign	659	821	785
Other European countries	442	542	448
Total	$ 6,171	$ 6,121	$ 5,632

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

20. NONCONSOLIDATED PARTIALLY-OWNED AFFILIATES

Investments in the net assets of nonconsolidated partially-owned affiliates are stated in the "Investments in partially-owned affiliates" line in the consolidated statements of financial position as of September 30, 2018 and 2017. Equity in the net income of nonconsolidated partially-owned affiliates is stated in the "Equity income" line in the consolidated statements of income for the years ended September 30, 2018, 2017 and 2016.

The following table presents summarized financial data for the Company's nonconsolidated partially-owned affiliates. The amounts included in the table below represent 100% of the results of continuing operations of such nonconsolidated partially-owned affiliates accounted for under the equity method.

Summarized balance sheet data as of September 30 is as follows (in millions):

	2018	2017
Current assets	$ 4,307	$ 4,034
Noncurrent assets	1,654	1,513
Total assets	$ 5,961	$ 5,547
Current liabilities	$ 2,718	$ 2,470
Noncurrent liabilities	459	478
Noncontrolling interests	39	33
Shareholders’ equity	2,745	2,566
Total liabilities and shareholders’ equity	$ 5,961	$ 5,547

Summarized income statement data for the years ended September 30 is as follows (in millions):

	2018	2017	2016
Net sales	$ 7,686	$ 6,445	$ 5,329
Gross profit	1,855	1,510	1,323
Net income	547	517	415
Income attributable to noncontrolling interests	10	11	16
Net income attributable to the entity	537	506	399

21. GUARANTEES

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

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

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

The changes in the carrying amount of the Company's total product warranty liability, including extended warranties for which deferred revenue is recorded, for the fiscal years ended September 30, 2018 and 2017 were as follows (in millions):

	Year Ended September 30, 2018	Year Ended September 30, 2017
Balance at beginning of period	$ 409	$ 374
Accruals for warranties issued during the period	309	312
Accruals from acquisitions and divestitures (1)	—	7
Accruals related to pre-existing warranties (including changes in estimates)	(26)	(4)
Settlements made (in cash or in kind) during the period	(297)	(280)
Currency translation	(3)	—
Balance at end of period	$ 392	$ 409

(1) The year ended September 30, 2017 includes $13 million of product warranties transferred to liabilities held for sale on the consolidated statements of financial position. Refer to Note 4, "Discontinued Operations," of the notes to consolidated financial statements for further information regarding the Company's disposal groups classified as held for sale.

As a result of the Tyco Merger in the fourth quarter of fiscal 2016, the Company recorded, as part of the acquired liabilities of Tyco, $290 million of post sale contingent tax indemnification liabilities which is generally recorded within other noncurrent liabilities in the consolidated statements of financial position. The liabilities are recorded at fair value and relate to certain tax related matters borne by the buyer of previously divested subsidiaries of Tyco which Tyco has indemnified certain parties and the amounts are probable of being paid. At September 30, 2018 and 2017, the Company recorded liabilities of $255 million and $290 million, respectively. Of the $255 million recorded as of September 30, 2018, $235 million is related to prior divested businesses and the remainder relates to Tyco's tax sharing agreements from its 2007 and 2012 spin-off transactions. These are certain guarantees or indemnifications extended among Tyco, Medtronic, TE Connectivity, ADT and Pentair in accordance with the terms of the 2007 and 2012 separation and tax sharing agreements.

22. COMMITMENTS AND CONTINGENCIES

Environmental Matters

The Company accrues for potential environmental liabilities when it is probable a liability has been incurred and the amount of the liability is reasonably estimable. As of September 30, 2018, reserves for environmental liabilities totaled $42 million, of which $11 million was recorded within other current liabilities and $31 million was recorded within other noncurrent liabilities in the consolidated statements of financial position. Reserves for environmental liabilities for continuing operations totaled $51 million at September 30, 2017, of which $10 million was recorded within other current liabilities and $41 million was recorded within other noncurrent liabilities in the consolidated statements of financial position. Such potential liabilities accrued by the Company do not take into consideration possible recoveries of future insurance proceeds. They do, however, take into account the likely share other parties will bear at remediation sites. It is difficult to estimate the Company's ultimate level of liability at many remediation sites due to the large number of other parties that may be involved, the complexity of determining the relative liability among those parties, the uncertainty as to the nature and scope of the investigations and remediation to be conducted, the uncertainty in the application of law and risk assessment, the various choices and costs associated with diverse technologies that may be used in corrective actions at the sites, and the often quite lengthy periods over which eventual remediation may occur. Nevertheless, the Company does not currently believe that any claims, penalties or costs in connection with known environmental matters will have a material adverse effect on the Company's financial position, results of operations or cash flows. In addition, the Company has identified asset retirement obligations for environmental matters that are expected to be addressed at the retirement, disposal, removal or abandonment of existing owned facilities. At September 30, 2018 and 2017, the Company recorded conditional asset retirement obligations of $45 million and $61 million, respectively.

Asbestos Matters

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

As of September 30, 2018, the Company's estimated asbestos related net liability recorded on a discounted basis within the Company's consolidated statements of financial position was $173 million. The net liability within the consolidated statements of financial position was comprised of a liability for pending and future claims and related defense costs of $550 million, of which $55 million was recorded in other current liabilities and $495 million was recorded in other noncurrent liabilities. The Company also maintained separate cash, investments and receivables related to insurance recoveries within the consolidated statements of financial position of $377 million, of which $33 million was recorded in other current assets and $344 million was recorded in other noncurrent assets. Assets included $6 million of cash and $281 million of investments, which have all been designated as restricted. In connection with the recognition of liabilities for asbestos-related matters, the Company records asbestos-related insurance recoveries that are probable; the amount of such recoveries recorded at September 30, 2018 was $90 million. As of September 30, 2017, the Company's estimated asbestos related net liability recorded on a discounted basis within the Company's consolidated statements of financial position was $181 million. The net liability within the consolidated statements of financial position was comprised of a liability for pending and future claims and related defense costs of $573 million, of which $48 million was recorded in other current liabilities and $525 million was recorded in other noncurrent liabilities. The Company also maintained separate cash, investments and receivables related to insurance recoveries within the consolidated statements of financial position of $392 million, of which $53 million was recorded in other current assets and $339 million was recorded in other noncurrent assets. Assets included $22 million of cash and $269 million of investments, which have all been designated as restricted. In connection with the recognition of liabilities for asbestos-related matters, the Company records asbestos-related insurance recoveries that are probable; the amount of such recoveries recorded at September 30, 2017 was $101 million.

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

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

Insurable Liabilities

The Company records liabilities for its workers' compensation, product, general and auto liabilities. The determination of these liabilities and related expenses is dependent on claims experience. For most of these liabilities, claims incurred but not yet reported are estimated by utilizing actuarial valuations based upon historical claims experience. At September 30, 2018 and 2017, the insurable liabilities totaled $417 million and $445 million, respectively, of which $95 million and $122 million was recorded within other current liabilities, $22 million and $22 million was recorded within accrued compensation and benefits, and $300 million and $301 million was recorded within other noncurrent liabilities in the consolidated statements of financial position, respectively. The Company records receivables from third party insurers when recovery has been determined to be probable. The amount of such receivables recorded at September 30, 2018 was $26 million, of which $6 million was recorded within other current assets and $20 million was recorded within other noncurrent assets. The amount of such receivables recorded at September 30, 2017 was $46 million, of which $31 million was recorded within other current assets and $15 million was recorded within other noncurrent assets. The Company maintains captive insurance companies to manage its insurable liabilities.

Arbitration Award

In September 2017, the Company was subject to an unfavorable arbitration award of approximately $50 million relating to a contractual dispute with a subcontractor used by the Company at an airport construction project in Doha, Qatar. In connection with the unfavorable arbitration award, the Company recorded a charge of $50 million within selling, general and administrative expenses on the consolidated statements of income in the fourth quarter of fiscal 2017. The airport project is being managed by a steering committee. The Company and the subcontractor were working jointly to document claims for increased costs against the steering committee when the subcontractor initiated the arbitration proceeding against the Company. Pursuant to its arbitration proceeding against the Company, the subcontractor sought to recover costs it alleges it incurred due to project delays, additional work and related financing costs. The Company has filed annulment proceedings with respect to the arbitration award in the local court in Qatar. In October 2018, the annulment proceeding was dismissed by the court. While the award remains outstanding, a portion of the balance will accrue interest at a statutory rate of 9.56%.

In a related action, the Company has initiated an arbitration claim against the steering committee related to costs it incurred in connection with delays of the airport construction project, including costs related to the above award. The arbitrator is expected to issue a decision on the Company’s claims against the steering committee by the end of the first quarter of fiscal 2019.

Aqueous Film-Forming Foam ("AFFF") Litigation

Two of our subsidiaries, Chemguard, Inc. ("Chemguard") and Tyco Fire Products L.P. ("Tyco Fire Products"), have been named, along with other defendant manufacturers, in a number of class action and other lawsuits relating to the use of fire-fighting foam products by the U.S. Department of Defense (the "DOD") and others for fire suppression purposes and related training exercises. Plaintiffs generally allege that the firefighting foam products manufactured by defendants contain or break down into the chemicals perfluorooctane sulfonate ("PFOS") and perfluorooctanoic acid ("PFOA") and/or other per- and poly fluorinated ("PFAS") compounds and that the use of these products by others at various airbases, airports and other sites resulted in the release of these chemicals into the environment and ultimately into communities’ drinking water supplies neighboring those airports, airbases and other sites. PFOA, PFOS, and other PFAS compounds are being studied by the United States Environmental Protection Agency ("EPA") and other environmental and health agencies and researchers. The EPA has not issued regulatory limits, however; while those studies continue, the EPA has issued a health advisory level for PFOA and PFOS in drinking water. Both PFOA and PFOS are types of synthetic chemical compounds that have been present in firefighting foam. However, both are also present in many existing consumer products. According to EPA, PFOA and PFOS have been used to make carpets, clothing, fabrics for furniture, paper packaging for food and other materials (e.g., cookware) that are resistant to water, grease or stains.

Plaintiffs generally seek compensatory damages, including damages for alleged personal injuries, medical monitoring, and alleged diminution in property values, and also seek punitive damages and injunctive relief to address remediation of the alleged contamination. The Company is named in 19 putative class actions in federal and state courts in six states as set forth below:

Colorado

- *District of Colorado - Bell et al. v. The 3M Company et al.*, filed September 18, 2016.
- *District of Colorado - Bell et al. v. The 3M Company et al.*, filed September 18, 2016.
- *District of Colorado - Davis et al. v. The 3M Company et al.*, filed September 22, 2016.

The above cases have been consolidated in the U.S. District Court for the District of Colorado, and a hearing on the plaintiffs’ motion for class certification is expected in 2018 with a trial date schedule for April 2019.

Delaware

- *District of Delaware - Anderson v. The 3M Company et al.*, filed May 18, 2018 in the United States District Court District of Delaware.
- *District of Delaware - Grubb v. The 3M Company et al.*, filed October 30, 2018 in the United States District Court District of Delaware.

Massachusetts

- *District of Massachusetts - Civitarese et al. v. The 3M Company et al.*, filed April 18, 2018 in the United States District Court of Massachusetts.

Washington

- *Eastern District of Washington - Ackerman et al. v. The 3M Company et al.*, filed April 5, 2018 in the United States District Court, Eastern District of Washington.

New York

- *Eastern District of New York - Green et al. v. The 3M Company et al.*, filed March 27, 2017 in Supreme Court of the State of New York, Suffolk County, prior to removal to federal court.
- *Southern District of New York - Adamo et al. v. The Port Authority of NY and NJ et al.*, filed August 11, 2017 in Supreme Court of the State of New York, Orange County, prior to removal to federal court.
- *Southern District of New York - Fogarty et al. v. The Port Authority of NY and NJ et al.*, filed August 11, 2017 in Supreme Court of the State of New York, Orange County, prior to removal to federal court.
- *Southern District of New York - Miller et al. v. The Port Authority of NY and NJ et al.*, filed August 11, 2017 in Supreme Court of the State of New York, Orange County, prior to removal to federal court.
- *Eastern District of New York - Singer et al. v. The 3M Company et al.*, filed October 10, 2017, in Supreme Court of the State of New York, Suffolk County, prior to removal to federal court.
- *Eastern District of New York - Shipman et al. v. The 3M Company et al.*, filed March 21, 2018, in Supreme Court of the State of New York, Suffolk County, prior to removal to federal court.
- *Eastern District of New York - Py et al. v. The 3M Company et al.*, filed April 26, 2018, in Supreme Court of the State of New York, Suffolk County, prior to removal to federal court.
- *Supreme Court of the State of New York, Dutchess County - County of Dutchess v. 3M Company et al.* - filed October 12, 2018.

Pennsylvania

- *Eastern District of Pennsylvania - Bates et al. v. The 3M Company et al.*, filed September 15, 2016.
- *Eastern District of Pennsylvania - Grande et al. v. The 3M Company et al.*, filed October 13, 2016.
- *Eastern District of Pennsylvania - Yockey et al. v. The 3M Company et al.*, filed October 24, 2016.
- *Eastern District of Pennsylvania - Fearnley et al. v. The 3M Company et al.*, filed December 9, 2016.

The above cases have been consolidated in the U.S. District Court for the Eastern District of Pennsylvania. The defendants' motion to dismiss the complaint in the consolidated proceeding was denied without prejudice and the cases are currently stayed pending the appeal of an action in which the Company is not a party.

In September of 2018, the Company filed a Petition for Multidistrict Litigation with the United States Judicial Panel on Multidistrict Litigation seeking to consolidate all existing and future federal cases into one jurisdiction. A hearing on this petition is set for November 29, 2018.

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

In addition, there are approximately 55 individual or "mass" actions pending in federal court in Colorado (41 cases), New York (4 cases) and Pennsylvania (10 cases) against Chemguard and Tyco Fire Products and other defendants in which the plaintiffs generally seek compensatory damages, including damages for alleged personal injuries, medical monitoring, and alleged diminution in property values. The cases involve approximately 7,000 plaintiffs in Colorado, approximately 126 plaintiffs in New York and 14 plaintiffs in Pennsylvania. The Company is also on notice of approximately 629 other possible individual product liability claims and 3 possible municipal claims by filings made in Pennsylvania state court, but complaints have not been filed in those matters, and, under Pennsylvania's procedural rules, they may or may not result in lawsuits.

Chemguard and Tyco Fire Products are also defendants in three municipal cases pending in the U.S. District Court for the District of Massachusetts: *Town of Barnstable v. the 3M. Co., et al,* (filed Nov. 21, 2016), *County of Barnstable v. the 3M. Co., et al*, (filed January 9, 2017) and *City of Westfield v. the 3M Co., et al.*, (filed on February 24, 2018), as well as two municipal cases pending in the Eastern District of New York: *Suffolk County Water Auth. v. 3M Co.* (filed November 30, 2017) and *Hampton Bays Water Dist. v. 3M Co.* (filed Feb. 21, 2018), one municipal case pending in the Southern District of New York: *City of Newburgh v. United*

States et al. (filed August 6, 2018), one municipal case pending in the Southern District of Ohio: *City of Dayton v. The 3M Company et al.* (filed October 3, 2018), one municipal case styled as a class action (discussed above) in the Supreme Court for the State of New York, Dutchess County: *Dutchess County v. The 3M Company et al.* (filed October 12, 2018), one municipal case pending in the Southern District of Florida, *City of Stuart v. the 3M Company et al.* (filed October 18, 2018), one municipal case filed in the Superior Court of the State of Arizona, County of Pima: *City of Tuscon and Town of Marana v. The 3M Company et al.* (filed November 8, 2018), one municipal case filed in the U.S. District Court for the District of New Jersey: *New Jersey-American Water Company, Inc. v. The 3M Company et al.,* (filed November 8, 2018), and one municipal case pending in the Northern District of Florida: *Emerald Coast Utilities Auth. v. 3M Co.* (filed June 22, 2018). These municipal plaintiffs generally allege that the use of the defendants' fire-fighting foam products at fire training academies, municipal airports, Air National Guard bases, or Navy bases released PFOS and PFOA into public water supply wells, allegedly requiring remediation of public property. The defendants have filed motions to dismiss in County of Barnstable, City of Westfield, Suffolk County Water Authority, and Hampton Bays Water Authority.

In May 2018, the Company was also notified by the Widefield Water and Sanitation District in Colorado Springs, Colorado that it may assert claims regarding its remediation costs in connection with PFOS and PFOA contamination allegedly resulting from the use of those products at the Peterson Air Force Base. In addition, three water districts in Pennsylvania, Horsham Water and Sewer Authority, Warminster Municipal Authority, and Warrington Township have filed praecipes for summons against Chemguard and Tyco Fire Products and other AFFF manufacturers relating to alleged PFOS and PFOA contamination. These praecipes are not active suits, but have the effect of tolling the statute of limitations.

Other AFFF Matters

Tyco Fire Products, in coordination with the Wisconsin Department of Natural Resources ("WDNR") and the Wisconsin Department of Health Services ("DHS"), has been conducting an environmental assessment of its Fire Technology Center ("FTC") located in Marinette, Wisconsin and surrounding areas in the City of Marinette and Town of Peshtigo, Wisconsin. In connection with the assessment, PFOS and PFOA have been detected at the FTC and in groundwater and surface water outside of the boundaries of the FTC. Tyco Fire Products continues to investigate the extent of potential migration of these compounds and is working closely with WDNR and DHS to develop interim measures to remove these compounds from certain areas where they have been detected.

The Company is vigorously defending these cases and believes that it has meritorious defenses to class certification and the claims asserted. However, there are numerous factual and legal issues to be resolved in connection with these claims, and it is extremely difficult to predict the outcome or ultimate financial exposure, if any, represented by these matters, but there can be no assurance that any such exposure will not be material. The Company is also pursuing insurance coverage for these matters.

Other Matters

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

23. RELATED PARTY TRANSACTIONS

In the ordinary course of business, the Company enters into transactions with related parties, such as equity affiliates. Such transactions consist of facility management services, the sale or purchase of goods and other arrangements.

The net sales to and purchases from related parties included in the consolidated statements of income were $958 million and $203 million, respectively, for fiscal 2018; $1,004 million and $195 million, respectively, for fiscal 2017; and $928 million and $184 million, respectively, for fiscal 2016.

The following table sets forth the amount of accounts receivable due from and payable to related parties in the consolidated statements of financial position (in millions):

	September 30, 2018	September 30, 2017
Receivable from related parties	$ 103	$ 131
Payable to related parties	75	50

The Company has also provided financial support to certain of its VIE's, see Note 1, "Summary of Significant Accounting Policies," of the notes to consolidated financial statements for additional information.

24. SUBSEQUENT EVENT

On November 13, 2018, the Company entered into a Stock and Asset Purchase Agreement ("Purchase Agreement") with BCP Acquisitions LLC ("Purchaser"). The Purchaser is a newly-formed entity controlled by investment funds managed by Brookfield Capital Partners LLC. Pursuant to the Purchase Agreement, on the terms and subject to the conditions therein, the Company has agreed to sell, and Purchaser has agreed to acquire, the Company's Power Solutions business for a purchase price of $13.2 billion. Net cash proceeds are expected to be $11.4 billion after tax and transaction-related expenses. The transaction is expected to close by June 30, 2019, subject to customary closing conditions and required regulatory approvals. The operating results of the Power Solutions business will be reported as a discontinued operation beginning in the first quarter of fiscal 2019.

JOHNSON CONTROLS INTERNATIONAL PLC AND SUBSIDIARIES
SCHEDULE II - VALUATION AND QUALIFYING ACCOUNTS

(In millions)

Year Ended September 30,	2018	2017	2016
Accounts Receivable - Allowance for Doubtful Accounts			
Balance at beginning of period	$ 182	$ 173	$ 70
Provision charged to costs and expenses	40	39	45
Reserve adjustments	(24)	(9)	(8)
Accounts charged off	(21)	(41)	(25)
Acquisition of businesses	—	18	91
Currency translation	—	2	—
Balance at end of period	$ 177	$ 182	$ 173
Deferred Tax Assets - Valuation Allowance			
Balance at beginning of period	$ 3,838	$ 3,400	$ 1,151
Allowance provision for new operating and other loss carryforwards	1,665	542	121
Allowance provision benefits	(308)	(157)	(331)
Acquisition of businesses	—	53	2,459
Balance at end of period	$ 5,195	$ 3,838	$ 3,400

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

None.

ITEM 9A CONTROLS AND PROCEDURES

Disclosure Controls and Procedures

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

Management's Report on Internal Control Over Financial Reporting

The Company's management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Exchange Act Rule 13a-15(f). The Company's management, with the participation of the Company's Chief Executive Officer and Chief Financial Officer, has evaluated the effectiveness of the Company's internal control over financial reporting based on the framework in Internal Control-Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on this evaluation, the Company's management has concluded that, as of September 30, 2018, the Company's internal control over financial reporting was effective.

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

PricewaterhouseCoopers LLP, an independent registered public accounting firm, has audited the Company's consolidated financial statements and the effectiveness of internal control over financial reporting as of September 30, 2018 as stated in its report which is included in Item 8 of this Form 10-K and is incorporated by reference herein.

Changes in Internal Control Over Financial Reporting

There have been no changes in the Company's internal control over financial reporting during the quarter ended September 30, 2018, that have materially affected, or are reasonably likely to materially affect, the Company's internal control over financial reporting.

ITEM 9B OTHER INFORMATION

None.

PART III

In response to Part III, Items 10, 11, 12, 13 and 14, parts of the Company's definitive proxy statement (to be filed pursuant to Regulation 14A within 120 days after Registrant's fiscal year-end of September 30, 2018) for its annual meeting to be held on March 6, 2019, are incorporated by reference in this Form 10-K.

ITEM 10 DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The information relating to directors and nominees of Johnson Controls is set forth under the caption "Proposal Number One" in Johnson Controls' proxy statement for its annual meeting of stockholders to be held on March 6, 2019 (the "Johnson Controls Proxy Statement") and is incorporated by reference herein. Information about executive officers is included in Part I, Item 4 of this Annual Report on Form 10-K. The information required by Items 405, 407(c)(3), (d)(4) and (d)(5) of Regulation S-K is contained under the captions "Section 16(a) Beneficial Ownership Reporting Compliance," "Governance of the Company - Nomination of Directors and Board Diversity," "Governance of the Company - Board Committees", and "Committees of the Board - Audit Committee" of the Johnson Controls Proxy Statement and such information is incorporated by reference herein.

Code of Ethics

Johnson Controls has adopted a code of ethics for directors, officers (including the Company's principal executive officer, principal financial officer and principal accounting officer) and employees, known as the Code of Ethics. The Code of Ethics is available in the "Investors - Corporate Governance" section of its website at www.johnsoncontrols.com. The Company posts any amendments to or waivers of its Code of Ethics (to the extent applicable to the Company's directors or executive officers) at the same location on the Company's website. In addition, copies of the Code of Ethics may be obtained in print without charge upon written request by any stockholder to the office of the Company at One Albert Quay, Cork, Ireland.

ITEM 11 EXECUTIVE COMPENSATION

The information required by Item 402 of Regulation S-K is contained under the captions "Compensation Discussion & Analysis" (excluding the information under the caption "Compensation Committee Report on Executive Compensation"), "Executive Compensation Tables" and "Compensation of Non-Employee Directors" of the Johnson Controls Proxy Statement. Such information is incorporated by reference.

The information required by Items 407(e)(4) and (e)(5) of Regulation S-K is contained under the captions "Committees of the Board - Compensation Committee Interlocks and Insider Participation" and "Compensation Discussion & Analysis - Compensation Committee Report on Executive Compensation" of the Johnson Controls Proxy Statement. Such information (other than the Compensation Committee Report on Executive Compensation, which shall not be deemed to be "filed") is incorporated by reference.

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

The information in the Johnson Controls Proxy Statement set forth under the caption "Security Ownership of Certain Beneficial Owners and Management" is incorporated herein by reference.

The following table provides information about the Company's equity compensation plans as of September 30, 2018:

	(a) Number of Securities to be Issued upon Exercise of Outstanding Options, Warrants and Rights	(b) Weighted-Average Exercise Price of Outstanding Options, Warrants and Rights	(c) Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans (Excluding Securities Reflected in Column (a))
Plan Category			
Equity compensation plans approved by shareholders	17,836,062	$ 34.24	45,026,606
Equity compensation plans not approved by shareholders	—	—	—
Total	17,836,062	$ 34.24	45,026,606

ITEM 13 CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

The information in the Johnson Controls Proxy Statement set forth under the captions "Committees of the Board," "Governance of the Company - Director Independence," and "Governance of the Company - Other Directorships, Conflicts and Related Party Transactions," is incorporated herein by reference.

ITEM 14 PRINCIPAL ACCOUNTING FEES AND SERVICES

The information in the Johnson Controls Proxy Statement set forth under "Proposal Number Two" related to the appointment of auditors is incorporated herein by reference.

PART IV

ITEM 15 EXHIBITS, FINANCIAL STATEMENT SCHEDULES

Reference is made to the separate exhibit index contained on pages 130 through 135 filed herewith.

All other schedules are omitted because they are not applicable, or the required information is shown in the financial statements or notes thereto.

Financial statements of 50% or less-owned companies have been omitted because the proportionate share of their profit before income taxes and total assets are individually less than 20% of the respective consolidated amounts, and investments in such companies are less than 20% of consolidated total assets. Refer to Note 20, "Non-Consolidated Partially-Owned Affiliates" of the notes to consolidated financial statements for the summarized financial data for the Company's nonconsolidated partially-owned affiliates.

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.

JOHNSON CONTROLS INTERNATIONAL PLC

By /s/ Brian J. Stief

Brian J. Stief

Executive Vice President and
Chief Financial Officer

Date: November 20, 2018

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below as of November 20, 2018, by the following persons on behalf of the registrant and in the capacities indicated:

/s/ George R. Oliver
George R. Oliver
Chairman and Chief Executive Officer
(Principal Executive Officer)

/s/ Brian J. Stief
Brian J. Stief
Executive Vice President and
Chief Financial Officer (Principal Financial Officer)

/s/ Robert M. VanHimbergen
Robert M. VanHimbergen
Vice President and Corporate Controller
(Principal Accounting Officer)

/s/ Jean Blackwell
Jean Blackwell
Director

/s/ Mike Daniels
Mike Daniels
Director

/s/ Roy Dunbar
Roy Dunbar
Director

/s/ Brian Duperreault
Brian Duperreault
Director

/s/ Gretchen R. Haggerty
Gretchen R. Haggerty
Director

/s/ Simone Menne
Simone Menne
Director

/s/ Juan Pablo del Valle Perochena
Juan Pablo del Valle Perochena
Director

/s/ Jürgen Tinggren
Jürgen Tinggren
Director

/s/ Mark P. Vergnano
Mark P. Vergnano
Director

/s/ David Yost
David Yost
Director

/s/ John D. Young
John D. Young
Director

Johnson Controls International plc
Index to Exhibits

(a) (1) and (2) Financial Statements and Supplementary Data - See Item 8
(b) Exhibit Index:

Exhibit	Title
2.1	Separation and Distribution Agreement, dated as of September 8, 2016, by and between Johnson Controls International plc and Adient Limited (incorporated by reference to Exhibit 2.1 to the registrant's Current Report on Form 8-K filed September 9, 2016)
2.2	Agreement and Plan of Merger by and among Johnson Controls, Inc., Johnson Controls International plc (formerly Tyco International plc) and Jagara Merger Sub LLC, dated as of January 24, 2016 (incorporated by reference to Exhibit 2.1 to the registrant's Current Report on Form 8-K filed January 27, 2016)
2.3	Merger Agreement, dated as of May 30, 2014, between Tyco International Ltd., and Johnson Controls International plc (formerly Tyco International plc) (incorporated by reference to Exhibit 2.1 to the registrant's Current Report on Form 8-K filed on June 4, 2014)
3.1	Memorandum and Articles of Association of Johnson Controls International plc, as amended by special resolutions dated September 8, 2014, August 17, 2016 and March 7, 2018 (incorporated by reference to Exhibit 3.1 to the registrant's Quarterly Report on Form 10-Q filed on May 3, 2018)
4.1	Assumption and Accession Agreement, dated as of November 17, 2014, by Johnson Controls International plc (formerly Tyco International plc) (incorporated by reference to Exhibit 4.1 to the registrant's current report on Form 8-K filed on November 17, 2014)
4.2	Indenture, dated December 28, 2016, between Johnson Controls International plc and U.S. Bank National Association, as trustee (incorporated by reference to Exhibit 4.1 to the registrant's current report on Form 8-K filed on December 28, 2016)
4.3	First Supplemental Indenture, dated December 28, 2016, between Johnson Controls International plc, and U.S. Bank National Association, as trustee, and Elavon Financial Services DAC, UK Branch, as paying agent for the New Euro Notes attaching forms of 2.355% Senior Notes due 2017 (retired; no longer outstanding), 7.125% Senior Notes due 2017 (retired; no longer outstanding), 1.400% Senior Notes due 2017 (retired, no longer outstanding as of November 2, 2017), 3.750% Notes due 2018 (retired; no longer outstanding), 5.000% Senior Notes due 2020, 4.25% Senior Notes due 2021, 3.750% Senior Notes due 2021, 3.625% Senior Notes due 2024, 6.000% Notes due 2036, 5.70% Senior Notes due 2041, 5.250% Senior Notes due 2041, 4.625% Senior Notes due 2044, 6.950% Debentures due December 1, 2045, 4.950% Senior Notes due 2064, 4.625% Notes due 2023, 1.375% Notes due 2025, 3.900% Notes due 2026, and 5.125% Notes due 2045 (incorporated by reference to Exhibit 4.2 to the registrant's current report on Form 8-K filed on December 28, 2016)
4.4	Second Supplemental Indenture, dated February 7, 2017, between Johnson Controls International plc and U.S. Bank National Association, as trustee, attaching form of 4.500% Senior Notes due 2047 (incorporated by reference to Exhibit 4.2 to the registrant's Current Report on Form 8-K filed on February 7, 2017)
4.5	Third Supplemental Indenture, dated March 15, 2017, among Johnson Controls International plc, U.S. Bank National Association, as trustee and Elavon Financial Services DAC, UK Branch, as paying agent, attaching form of 1.000% Senior Notes due 2023 (incorporated by reference to Exhibit 4.2 to the registrant's Current Report on Form 8-K filed on March 15, 2017)
4.6	Fourth Supplemental Indenture, dated December 4, 2017, among Johnson Controls International plc, U.S. Bank National Association, as trustee and Elavon Financial Services DAC, UK Branch, as paying agent (attaching form of 0.000% Senior Notes due 2020) (incorporated by reference to Exhibit 4.2 to the registrant's Current Report on Form 8-K filed on December 4, 2017).
4.7	Miscellaneous long-term debt agreements and financing leases with banks and other creditors and debenture indentures.*

Exhibit	Title
4.8	Miscellaneous industrial development bond long-term debt issues and related loan agreements and leases.*
10.1	Term Loan Credit Agreement, dated as of March 10, 2016, among Tyco International Holding S.à r.l., each of the initial lenders named therein, Citibank, N.A., as administrative agent, Citigroup Global Markets Inc., Merrill, Lynch, Pierce, Fenner & Smith Incorporated, Wells Fargo Securities, LLC and JPMorgan Chase Bank N.A. as joint lead arrangers and joint bookrunners (incorporated by reference to Exhibit 10.1 to the registrant's Current Report on Form 8-K filed March 16, 2016)
10.2	Letter Amendment No. 1 dated as of September 1, 2016 to the Term Loan Credit Agreement, dated as of March 10, 2016, among Tyco International Holding S.à r.l., each of the initial lenders named therein, Citibank, N.A., as administrative agent, Citigroup Global Markets Inc., Merrill, Lynch, Pierce, Fenner & Smith Incorporated, Wells Fargo Securities, LLC and JPMorgan Chase Bank N.A. as joint lead arrangers and joint bookrunners (incorporated by reference to Exhibit 10.2 to the registrant's Annual Report on Form 10-K for the fiscal year ended September 30, 2017 filed on November 21, 2017)
10.3	Letter Amendment No. 2 dated as of August 10, 2017 to the Term Loan Credit Agreement, dated as of March 10, 2016, among Tyco International Holding S.à r.l., each of the initial lenders named therein, Citibank, N.A., as administrative agent, Citigroup Global Markets Inc., Merrill, Lynch, Pierce, Fenner & Smith Incorporated, Wells Fargo Securities, LLC and JPMorgan Chase Bank N.A. as joint lead arrangers and joint bookrunners (incorporated by reference to Exhibit 10.3 to the registrant's Annual Report on Form 10-K for the fiscal year ended September 30, 2017 filed on November 21, 2017)
10.4	Multi-Year Senior Unsecured Credit Agreement, dated as of March 10, 2016, among Tyco International Holding S.à r.l., each of the initial lenders named therein, Citibank, N.A., as administrative agent, and Citigroup Global Markets Inc., Merrill Lynch, Pierce, Fenner & Smith Incorporated, Barclays Bank plc, Wells Fargo Securities, LLC and JPMorgan Chase Bank, N.A. as joint lead arrangers and joint bookrunners (incorporated by reference to Exhibit 10.2 to the registrant's Current Report on Form 8-K filed March 16, 2016)
10.5	Letter Amendment No. 1 dated as of September 1, 2016 to the Multi-Year Senior Unsecured Credit Agreement, dated as of March 10, 2016, among Tyco International Holding S.à r.l., each of the initial lenders named therein, Citibank, N.A., as administrative agent, and Citigroup Global Markets Inc., Merrill Lynch, Pierce, Fenner & Smith Incorporated, Barclays Bank plc, Wells Fargo Securities, LLC and JPMorgan Chase Bank, N.A. as joint lead arrangers and joint bookrunners (incorporated by reference to Exhibit 10.5 to the registrant's Annual Report on Form 10-K for the fiscal year ended September 30, 2017 filed on November 21, 2017)
10.6	Letter Amendment No. 2 dated as of August 10, 2017 to the Multi-Year Senior Unsecured Credit Agreement, dated as of March 10, 2016, among Tyco International Holding S.à r.l., each of the initial lenders named therein, Citibank, N.A., as administrative agent, and Citigroup Global Markets Inc., Merrill Lynch, Pierce, Fenner & Smith Incorporated, Barclays Bank plc, Wells Fargo Securities, LLC and JPMorgan Chase Bank, N.A. as joint lead arrangers and joint bookrunners (incorporated by reference to Exhibit 10.6 to the registrant's Annual Report on Form 10-K for the fiscal year ended September 30, 2017 filed on November 21, 2017)
10.7	Consent to Commitment Increase dated March 23, 2018, with respect to the Multi-Year Senior Unsecured Credit Agreement dated as of March 10, 2016 (as amended or modified from time to time) among Tyco International Holding S.à r.l., the lenders party thereto and Citibank, N.A., as administrative agent for the lenders (incorporated by reference to Exhibit 10.1 to the registrant's Quarterly Report on Form 10-Q filed on May 3, 2018)
10.8	Credit Agreement, dated as of March 10, 2016, among Johnson Controls, Inc., the financial institutions parties thereto and JPMorgan Chase Bank, N.A., as administrative agent (incorporated by reference to Exhibit 4.2 to Johnson Controls, Inc.'s Current Report on Form 8-K filed March 16, 2016) (Commission File No. 1-5097)
10.9	Amendment No. 1 dated as of November 1, 2016 to the Credit Agreement, dated as of March 10, 2016, among Johnson Controls, Inc., Johnson Controls International plc, Tyco Fire & Security Finance S.C.A. and Tyco International Finance S.A., the financial parties thereto and JPMorgan Chase Bank, N.A., as administrative agent (incorporated by reference to Exhibit 10.8 to the registrant's Annual Report on Form 10-K for the fiscal year ended September 30, 2017 filed on November 21, 2017)

Johnson Controls International plc
Index to Exhibits

Exhibit	Title
10.10	Transition Services Agreement, dated as of September 8, 2016, by and between Johnson Controls International plc and Adient Limited (incorporated by reference to Exhibit 10.1 to the registrant's Current Report on Form 8-K filed on September 9, 2016)
10.11	Tax Matters Agreement, dated as of September 8, 2016, by and between Johnson Controls International plc and Adient Limited (incorporated by reference to Exhibit 10.2 to the registrant's Current Report on Form 8-K filed on September 9, 2016)
10.12	Employee Matters Agreement, dated as of September 8, 2016, by and between Johnson Controls International plc and Adient Limited (incorporated by reference to Exhibit 10.3 to the registrant's Current Report on Form 8-K filed on September 9, 2016)
10.13	Transitional Trademark License Agreement, dated as of September 8, 2016, by and between Johnson Controls International plc and Adient Limited (incorporated by reference to Exhibit 10.4 to the registrant's Current Report on Form 8-K filed on September 9, 2016)
10.14	Tax Sharing Agreement, dated September 28, 2012 by and among Pentair Ltd., Johnson Controls International plc (formerly Tyco International Ltd.), Tyco International Finance S.A. and The ADT Corporation (incorporated by reference to Exhibit 10.1 to the registrant's Current Report on Form 8-K filed on October 1, 2012) (Commission File No. 1-13836)
10.15	Non-Income Tax Sharing Agreement dated September 28, 2012 by and among Johnson Controls International plc (formerly Tyco International Ltd.), Tyco International Finance S.A. and The ADT Corporation (incorporated by reference to Exhibit 10.2 to the registrant's Current Report on Form 8-K filed on October 1, 2012) (Commission File No. 1-13836)
10.16	Trademark Agreement, dated as of September 25, 2012, by and among ADT Services GmbH, ADT US Holdings, Inc., Johnson Controls International plc (formerly Tyco International Ltd.) and The ADT Corporation (incorporated by reference to Exhibit 10.3 to the registrant's Current Report on Form 8-K filed on October 1, 2012) (Commission File No. 1-13836)
10.17	Form of Deed of Indemnification between Johnson Controls International plc (formerly Tyco International plc) and certain of its directors and officers (incorporated by reference to Exhibit 10.4 to the registrant's Current Report on Form 8-K filed on September 6, 2016)
10.18	Form of Indemnification Agreement between Tyco Fire & Security (US) Management, Inc. and certain directors and officers of Johnson Controls International plc (incorporated by reference to Exhibit 10.5 to the registrant's Current Report on Form 8-K filed on September 6, 2016)
10.19	Tyco International plc 2004 Share and Incentive Plan (incorporated by reference to Exhibit 10.3 to the registrant's Current Report on Form 8-K filed on November 17, 2014) (Commission File No. 1-13836)**
10.20	Johnson Controls International plc 2012 Share and Incentive Plan, amended and restated as of March 8, 2017 (incorporated by reference to Exhibit 10.2 to the registrant's Quarterly Report on Form 10-Q filed on May 4, 2017)**
10.21	Johnson Controls International plc 2007 Stock Option Plan (incorporated by reference to Exhibit 10.7 to the registrant's Current Report on Form 8-K filed on September 6, 2016) **
10.22	Johnson Controls International plc 2012 Omnibus Incentive Plan (incorporated by reference to Exhibit 10.6 to the registrant's Current Report on Form 8-K filed on September 6, 2016) **
10.23	Johnson Controls International plc Severance and Change in Control Policy for Officers, Amended and Restated December 7, 2017 (Incorporated by reference to Exhibit 10.2 to the registrant's Current Report on Form 8-K filed on December 11, 2017) **

Exhibit	Title
10.24	Johnson Controls International plc Executive Deferred Compensation Plan, as amended and restated effective January 1, 2018 (incorporated by reference to Exhibit 10.3 to the registrant's Quarterly Report on Form 10-Q filed on May 3, 2018) **
10.25	Johnson Controls International plc Senior Executive Deferred Compensation Plan effective as of January 1, 2018 (incorporated by reference to Exhibit 10.4 to the registrant's Current Report on Form 8-K filed on September 19, 2017) **
10.26	Johnson Controls International plc Retirement Restoration Plan, as amended and restated effective January 1, 2018 (incorporated by reference to Exhibit 10.4 to the registrant's Quarterly Report on Form 10-Q filed on May 3, 2018) **
10.27	Tyco Supplemental Savings and Retirement Plan as amended and restated effective January 1, 2018 (incorporated by reference to Exhibit 10.4 to the registrant's Current Report on Form 8-K filed on September 19, 2017) **
10.28	Johnson Controls International plc Executive Compensation Incentive Recoupment Policy effective September 2, 2016 (incorporated by reference to Exhibit 10.24 to the registrant's Annual Report on Form 10-K for the fiscal year ended September 30, 2016 filed on November 23, 2016)**
10.29	Amended and Restated Executive Employment Agreement, dated as of January 24, 2016, by and between Johnson Controls, Inc. and Alex A. Molinaroli (incorporated by reference to Exhibit 10.1 to Johnson Controls, Inc.'s Current Report on Form 8-K filed on January 27, 2016) (Commission File No. 1-5097) **
10.30	Amended and Restated Change of Control Executive Employment Agreement, dated as of January 24, 2016, by and between Johnson Controls, Inc. and Alex A. Molinaroli (incorporated by reference to Exhibit 10.2 to Johnson Controls, Inc.'s Current Report on Form 8-K filed on January 27, 2016) (Commission File No. 1-5097) **
10.31	Amendment to the Amended and Restated Change of Control Executive Employment Agreement, dated as of April 1, 2016, by and between Johnson Controls, Inc. and Alex Molinaroli (incorporated by reference to Exhibit 10.3 to Johnson Controls, Inc.'s Quarterly Report on Form 10-Q filed on April 29, 2016) (Commission File No. 1-5097) **
10.32	Form of employment agreement, including form of change in control agreement, between Johnson Controls, Inc. and Messrs. Jackson, Walicki and Williams, as amended and restated July 28, 2010 (incorporated by reference to Exhibit 10.Y to Johnson Controls, Inc.'s Quarterly Report on Form 10-Q filed on August 3, 2010) (Commission File No. 1-5097) **
10.33	Form of letter agreement amending certain provisions of the employment agreement between Johnson Controls, Inc. and Messrs. Jackson, Walicki and Williams (incorporated by reference to Exhibit 10.32 to the registrant's Annual Report on Form 10-K for the fiscal year ended September 30, 2016 filed on November 23, 2016)**
10.34	Letter Agreement between Johnson Controls International plc and George R. Oliver dated December 8, 2017 (Incorporated by reference to Exhibit 10.1 to the registrant's Current Report on Form 8-K filed on December 11, 2017).**
10.35	Form of terms and conditions for Option / SAR Awards, Restricted Stock / Unit Awards, Performance Share Awards under the Johnson Controls International plc 2012 Share and Incentive Plan for fiscal 2018 (incorporated by reference to Exhibit 10.3 to the registrant's Quarterly Report on Form 10-Q filed on February 2, 2018)**
10.36	Form of terms and conditions for Option / SAR Awards, and Restricted Stock / Unit Awards, under the Johnson Controls International plc 2012 Share and Incentive Plan for fiscal 2018 applicable to Messrs. Oliver and Stief (incorporated by reference to Exhibit 10.4 to the registrant's Quarterly Report on Form 10-Q filed on February 2, 2018)**

Exhibit	Title
10.37	Form of terms and conditions for Option / SAR Awards, Restricted Stock / Unit Awards, Performance Share Awards under the Johnson Controls International plc 2012 Share and Incentive Plan for periods commencing on September 2, 2016 (incorporated by reference to Exhibit 10.33 to the registrant's Annual Report on Form 10-K for the fiscal year ended September 30, 2016 filed on November 23, 2016)**
10.38	Form of terms and conditions for Option / SAR Awards, and Restricted Stock / Unit Awards, under the Johnson Controls International plc 2012 Share and Incentive Plan for periods commencing on September 2, 2016 applicable to Messrs. Molinaroli, Oliver and Stief (incorporated by reference to Exhibit 10.1 to registrant's Quarterly Report on Form 10-Q filed on February 8, 2017)**
10.39	Terms of Unit Award under the Johnson Controls International plc 2012 Share and Incentive Plan for Brian J. Stief dated September 14, 2017 (incorporated by reference to Exhibit 10.1 to the registrant's Current Report on Form 8-K filed on September 15, 2017)**
10.40	Terms of PSU Award under the Johnson Controls International plc 2012 Share and Incentive Plan for Brian J. Stief dated September 14, 2017 (incorporated by reference to Exhibit 10.2 to the registrant's Current Report on Form 8-K filed on September 15, 2017)**
10.41	Terms of RSU Award under the Johnson Controls International plc 2012 Share and Incentive Plan for Brian J. Stief dated September 14, 2017 (incorporated by reference to Exhibit 10.3 to the registrant's Current Report on Form 8-K filed on September 15, 2017)**
10.42	Letter Agreement dated as of September 14, 2017 between Johnson Controls International plc and Brian J. Stief (incorporated by reference to Exhibit 10.4 to the registrant's Current Report on Form 8-K filed on September 15, 2017)**
10.43	Form of terms and conditions for Option Awards, Restricted Unit Awards, Performance Share Awards under the 2012 Share and Incentive Plan for fiscal 2016 (incorporated by reference to Exhibit 10.2 to the registrant's Current Report on Form 8-K filed on October 13, 2015) **
10.44	Form of terms and conditions for Option Awards, Restricted Unit Awards, Performance Share Awards under the 2012 Stock and Incentive Plan for fiscal 2015 (incorporated by reference to Exhibit 10.9 to the registrant's Annual Report on Form 10-K for the fiscal year ended September 26, 2014 filed on November 14, 2014) (Commission File No. 1-13836) **
10.45	Form of terms and conditions for Option Awards, Restricted Unit Awards, Performance Share Awards under the 2012 Stock and Incentive Plan for fiscal 2014 (incorporated by reference to Exhibit 10.9 to the registrant's Annual Report on Form 10-K filed on for the year ended September 27, 2013 filed on November 14, 2013) (Commission File No. 1-13836)**
10.46	Form of terms and conditions for Restricted Stock Unit Awards for Directors under the 2012 Stock and Incentive Plan (incorporated by reference to Exhibit 10.13 to the registrant's Annual Report on Form 10-K for the year ended September 28, 2012 filed on November 16, 2012) (Commission File No. 1-13836) **
10.47	Form of terms and conditions for Restricted Stock Units for Directors under the Johnson Controls International plc 2012 Share and Incentive Plan for use beginning in 2018 (incorporated by reference to Exhibit 10.2 to the registrant's Quarterly Report on Form 10-Q filed on May 3, 2018)**
10.48	Form of stock option or stock appreciation right award agreement for Johnson Controls, Inc. 2007 Stock Option Plan effective September 20, 2011 (incorporated by reference to Exhibit 10.V to Johnson Controls, Inc.'s Annual Report on Form 10-K for the year ended September 30, 2011 filed on November 22, 2011) (Commission File No. 1-5097) **
10.49	Johnson Controls, Inc. 2012 Omnibus Incentive Plan (incorporated by reference to Exhibit 10.1(a) to Johnson Controls, Inc.'s Current Report on Form 8-K filed January 28, 2013) (Commission File No. 1-5097) **

Johnson Controls International plc
Index to Exhibits

Exhibit	Title
10.53	Form of performance share unit agreement for Johnson Controls, Inc. 2012 Omnibus Incentive Plan for recipients who have not announced an intention to retire (incorporated by reference to Exhibit 10.1(a) to Johnson Controls, Inc.'s Current Report on Form 8-K filed November 21, 2013) (Commission File No. 1-5097) **
10.54	Form of performance share unit agreement for Johnson Controls, Inc. 2012 Omnibus Incentive Plan for recipients who have announced an intention to retire (incorporated by reference to Exhibit 10.1(d) to Johnson Controls, Inc.'s Current Report on Form 8-K filed November 21, 2013) (Commission File No. 1-5097) **
10.55	Form of restricted stock/restricted stock unit agreement for Johnson Controls, Inc. 2012 Omnibus Incentive Plan (incorporated by reference to Exhibit 10.1(b) to Johnson Controls, Inc.'s Current Report on Form 8-K filed November 21, 2013) (Commission File No. 1-5097) **
10.56	Form of restricted stock/restricted stock unit agreement for Johnson Controls, Inc. 2012 Omnibus Incentive Plan reflecting pro rata vesting on retirement, filed herewith (incorporated by reference to Exhibit 10.BB to Johnson Controls, Inc.'s Annual Report on Form 10-K for the year ended September 30, 2015 filed on November 18, 2015) (Commission File No. 1-5097) **
10.57	Form of option/stock appreciation right agreement for Johnson Controls, Inc. 2012 Omnibus Incentive Plan (incorporated by reference to Exhibit 10.1(c) to Johnson Controls, Inc.'s Current Report on Form 8-K filed November 21, 2013) (Commission File No. 1-5097) **
10.58	Global Assignment Letter between the Company and Jeff M. Williams dated January 30, 2017 (filed herewith) **
18	Preferability Letter on Change in Accounting Principle (filed herewith)
21.1	Subsidiaries of Johnson Controls International plc (filed herewith)
23.1	Consent of Independent Public Accounting Firm (filed herewith)
31.1	Certification by the Chief Executive Officer pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 (filed herewith)
31.2	Certification by the Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 (filed herewith)
32.1	Certification by the Chief Executive Officer and Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (filed herewith)
101	Financial statements from the Annual Report on Form 10-K of Johnson Controls International plc for the fiscal year ended September 30, 2018 formatted in XBRL: (i) the Consolidated Statements of Financial Position, (ii) the Consolidated Statements of Income, (iii) the Consolidated Statements of Comprehensive Income (Loss), (iv) the Consolidated Statements of Cash Flow, (v) the Consolidated Statements of Shareholders' Equity Attributable to Johnson Controls Ordinary Shareholders and (vi) Notes to Consolidated Financial Statements (filed herewith)

* These instruments are not being filed as exhibits herewith because none of the long-term debt instruments authorizes the issuance of debt in excess of 10% of the total assets of Johnson Controls International plc and its subsidiaries on a consolidated basis. Johnson Controls International plc agrees to furnish a copy of each agreement to the Securities and Exchange Commission upon request.

** Management contract or compensatory plan.