Table of Contents

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

FORM 10-Q

(Mark One)

☒ QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

For the quarterly period ended 30 June 2019

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 001-04534

AIR PRODUCTS AND CHEMICALS, INC.

(Exact Name of Registrant as Specified in Its Charter)

Delaware	23-1274455
(State or Other Jurisdiction of Incorporation or Organization)	(I.R.S. Employer Identification No.)
7201 Hamilton Boulevard , Allentown , Pennsylvania	18195-1501
(Address of Principal Executive Offices)	(Zip Code)

610-481-4911
(Registrant's Telephone Number, Including Area Code)

Not Applicable
(Former Name, Former Address and Former Fiscal Year, if Changed Since Last Report)

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, par value $1.00 per share	APD	New York Stock Exchange
2.0% Euro Notes due 2020	APD20	New York Stock Exchange
0.375% Euro Notes due 2021	APD21B	New York Stock Exchange
1.0% Euro Notes due 2025	APD25	New York Stock Exchange

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

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

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

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

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

The number of shares of common stock, $1 par value per share, outstanding at 30 June 2019 was 220,355,139.

AIR PRODUCTS AND CHEMICALS, INC. and Subsidiaries
INDEX

FORWARD-LOOKING STATEMENTS

This quarterly report contains “forward-looking statements” within the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. Forward-looking statements include all statements that do not relate solely to historical or current facts and can generally be identified by words such as “anticipate,” “believe,” “could,” “estimate,” “expect,” “forecast,” “goal,” “intend,” “may,” “outlook,” “plan,” “positioned,” “possible,” “potential,” “project,” “should,” “target,” “will,” “would,” and similar expressions or variations thereof, or the negative thereof, but these terms are not the exclusive means of identifying such statements. Forward-looking statements are based on management’s expectations and assumptions as of the date of this report and are not guarantees of future performance. You are cautioned not to place undue reliance on our forward-looking statements.

Forward-looking statements may relate to a number of matters, including expectations regarding revenue, margins, expenses, earnings, tax provisions, cash flows, pension obligations, share repurchases or other statements regarding economic conditions or our business outlook; statements regarding plans, projects, strategies and objectives for our future operations, including our ability to win new projects and execute the projects in our backlog; and statements regarding our expectations with respect to pending legal claims or disputes. While forward-looking statements are made in good faith and based on assumptions, expectations and projections that management believes are reasonable based on currently available information, actual performance and financial results may differ materially from projections and estimates expressed in the forward-looking statements because of many factors, including, without limitation:

- changes in global or regional economic conditions, supply and demand dynamics in the market segments we serve, or in the financial markets;
- risks associated with having extensive international operations, including political risks, risks associated with unanticipated government actions and risks of investing in developing markets;
- project delays, contract terminations, customer cancellations, or postponement of projects and sales;
- the future financial and operating performance of major customers and joint venture partners;
- our ability to develop, implement, and operate new technologies, or to execute the projects in our backlog;

- tariffs, economic sanctions and regulatory activities in jurisdictions in which we and our affiliates and joint ventures operate;
- the impact of environmental, tax or other legislation, as well as regulations affecting our business and related compliance requirements, including regulations related to global climate change;
- changes in tax rates and other changes in tax law;
- the timing, impact, and other uncertainties relating to acquisitions and divestitures, including our ability to integrate acquisitions and separate divested businesses, respectively;
- risks relating to cybersecurity incidents, including risks from the interruption, failure or compromise of our information systems;
- catastrophic events, such as natural disasters, acts of war, or terrorism;
- the impact of price fluctuations in natural gas and disruptions in markets and the economy due to oil price volatility;
- costs and outcomes of legal or regulatory proceedings and investigations;
- asset impairments due to economic conditions or specific events;
- significant fluctuations in interest rates and foreign currency exchange rates from those currently anticipated;
- damage to facilities, pipelines or delivery systems, including those we own or operate for third parties;
- availability and cost of raw materials; and
- the success of productivity and operational improvement programs.

In addition to the foregoing factors, forward-looking statements contained herein are qualified with respect to the risks disclosed elsewhere in this document, including in Item 2, Management's Discussion and Analysis of Financial Condition and Results of Operations and Item 3, Quantitative and Qualitative Disclosures About Market Risk, as well as with respect to the risks described in Item 1A, Risk Factors, to our Annual Report on Form 10-K for the year ended 30 September 2018. Any of these factors, as well as those not currently anticipated by management, could cause our results of operations, financial condition or liquidity to differ materially from what is expressed or implied by any forward-looking statement. Except as required by law, we disclaim any obligation or undertaking to update or revise any forward-looking statements contained herein to reflect any change in assumptions, beliefs, or expectations or any change in events, conditions, or circumstances upon which any such forward-looking statements are based.

PART I. FINANCIAL INFORMATION
Item 1. Financial Statements

AIR PRODUCTS AND CHEMICALS, INC. and Subsidiaries
CONSOLIDATED INCOME STATEMENTS
(Unaudited)

	Three Months Ended 30 June		Nine Months Ended 30 June	
(Millions of dollars, except for share and per share data)	2019	2018	2019	2018
Sales	$2,224.0	$2,259.0	$6,635.7	$6,631.3
Cost of sales	1,466.0	1,545.4	4,484.7	4,623.7
Facility closure	—	—	29.0	—
Selling and administrative	188.5	188.6	568.1	574.8
Research and development	18.1	15.0	50.0	44.1
Cost reduction actions	25.5	—	25.5	—
Gain on exchange of equity affiliate investments	29.1	—	29.1	—
Other income (expense), net	14.7	5.8	33.7	43.2
Operating Income	569.7	515.8	1,541.2	1,431.9
Equity affiliates' income	56.4	58.1	155.5	115.6
Interest expense	34.2	34.9	106.9	95.1
Other non-operating income (expense), net	17.6	12.8	49.8	33.7
Income From Continuing Operations Before Taxes	609.5	551.8	1,639.6	1,486.1
Income tax provision	109.3	107.1	348.9	455.1
Income From Continuing Operations	500.2	444.7	1,290.7	1,031.0
Income From Discontinued Operations, net of tax	—	43.2	—	42.2
Net Income	500.2	487.9	1,290.7	1,073.2
Net Income Attributable to Noncontrolling Interests of Continuing Operations	12.2	14.0	33.9	28.3
Net Income Attributable to Air Products	$488.0	$473.9	$1,256.8	$1,044.9
Net Income Attributable to Air Products				
Income from continuing operations	$488.0	$430.7	$1,256.8	$1,002.7
Income from discontinued operations	—	43.2	—	42.2
Net Income Attributable to Air Products	$488.0	$473.9	$1,256.8	$1,044.9
Basic Earnings Per Common Share Attributable to Air Products				
Income from continuing operations	$2.21	$1.96	$5.71	$4.57
Income from discontinued operations	—	.20	—	.19
Net Income Attributable to Air Products	$2.21	$2.16	$5.71	$4.76
Diluted Earnings Per Common Share Attributable to Air Products				
Income from continuing operations	$2.20	$1.95	$5.68	$4.54
Income from discontinued operations	—	.20	—	.19
Net Income Attributable to Air Products	$2.20	$2.15	$5.68	$4.73
Weighted Average Common Shares – Basic (in millions)	220.6	219.5	220.2	219.3
Weighted Average Common Shares – Diluted (in millions)	221.9	220.9	221.4	220.7

The accompanying notes are an integral part of these statements.

AIR PRODUCTS AND CHEMICALS, INC. and Subsidiaries
CONSOLIDATED COMPREHENSIVE INCOME STATEMENTS
(Unaudited)

	Three Months Ended 30 June	
(Millions of dollars)	2019	2018
Net Income	$500.2	$487.9
Other Comprehensive Loss, net of tax:		
Translation adjustments, net of tax of ($3.3) and $5.2	(48.8)	(392.4)
Net gain on derivatives, net of tax of $4.5 and $8.8	7.5	27.1
Reclassification adjustments:		
Currency translation adjustment	(2.6)	—
Derivatives, net of tax of ($3.5) and ($5.5)	(13.1)	(17.7)
Pension and postretirement benefits, net of tax of $4.8 and $7.8	14.8	26.0
Total Other Comprehensive Loss	(42.2)	(357.0)
Comprehensive Income	458.0	130.9
Net Income Attributable to Noncontrolling Interests	12.2	14.0
Other Comprehensive Loss Attributable to Noncontrolling Interests	(5.6)	(14.5)
Comprehensive Income Attributable to Air Products	$451.4	$131.4

	Nine Months Ended 30 June	
(Millions of dollars)	2019	2018
Net Income	$1,290.7	$1,073.2
Other Comprehensive Loss, net of tax:		
Translation adjustments, net of tax of $9.6 and ($14.6)	(65.6)	(130.4)
Net gain (loss) on derivatives, net of tax of ($4.9) and $7.5	(38.2)	35.4
Pension and postretirement benefits, net of tax of ($0.8) and $–	(3.9)	—
Reclassification adjustments:		
Currency translation adjustment	(2.6)	3.1
Derivatives, net of tax of $7.2 and ($7.1)	20.7	(24.4)
Pension and postretirement benefits, net of tax of $15.8 and $26.7	48.7	75.5
Total Other Comprehensive Loss	(40.9)	(40.8)
Comprehensive Income	1,249.8	1,032.4
Net Income Attributable to Noncontrolling Interests	33.9	28.3
Other Comprehensive Loss Attributable to Noncontrolling Interests	(1.4)	(10.4)
Comprehensive Income Attributable to Air Products	$1,217.3	$1,014.5

The accompanying notes are an integral part of these statements.

Table of Contents

AIR PRODUCTS AND CHEMICALS, INC. and Subsidiaries
CONSOLIDATED BALANCE SHEETS
(Unaudited)

(Millions of dollars, except for share and per share data)	30 June 2019	30 September 2018
Assets		
Current Assets		
Cash and cash items	$2,696.8	$2,791.3
Short-term investments	—	184.7
Trade receivables, net	1,340.7	1,207.2
Inventories	408.3	396.1
Prepaid expenses	97.2	129.6
Other receivables and current assets	372.2	373.3
Total Current Assets	4,915.2	5,082.2
Investment in net assets of and advances to equity affiliates	1,290.4	1,277.2
Plant and equipment, at cost	22,425.6	21,490.2
Less: accumulated depreciation	11,998.0	11,566.5
Plant and equipment, net	10,427.6	9,923.7
Goodwill, net	820.4	788.9
Intangible assets, net	441.1	438.5
Noncurrent capital lease receivables	938.4	1,013.3
Other noncurrent assets	698.8	654.5
Total Noncurrent Assets	14,616.7	14,096.1
Total Assets	$19,531.9	$19,178.3
Liabilities and Equity		
Current Liabilities		
Payables and accrued liabilities	$1,543.2	$1,817.8
Accrued income taxes	65.6	59.6
Short-term borrowings	79.9	54.3
Current portion of long-term debt	466.5	406.6
Total Current Liabilities	2,155.2	2,338.3
Long-term debt	2,951.7	2,967.4
Long-term debt – related party	321.6	384.3
Other noncurrent liabilities	1,553.6	1,536.9
Deferred income taxes	823.2	775.1
Total Noncurrent Liabilities	5,650.1	5,663.7
Total Liabilities	7,805.3	8,002.0
Commitments and Contingencies - See Note 12		
Air Products Shareholders' Equity		
Common stock (par value $1 per share; issued 2019 and 2018 - 249,455,584 shares)	249.4	249.4
Capital in excess of par value	1,059.9	1,029.3
Retained earnings	13,891.9	13,409.9
Accumulated other comprehensive loss	(1,781.4)	(1,741.9)
Treasury stock, at cost (2019 - 29,100,445 shares; 2018 - 29,940,339 shares)	(2,033.7)	(2,089.2)
Total Air Products Shareholders' Equity	11,386.1	10,857.5
Noncontrolling Interests	340.5	318.8
Total Equity	11,726.6	11,176.3
Total Liabilities and Equity	$19,531.9	$19,178.3

The accompanying notes are an integral part of these statements.

AIR PRODUCTS AND CHEMICALS, INC. and Subsidiaries
CONSOLIDATED STATEMENTS OF CASH FLOWS
(Unaudited)

	Nine Months Ended 30 June	
(Millions of dollars)	2019	2018
Operating Activities		
Net income	$1,290.7	$1,073.2
Less: Net income attributable to noncontrolling interests of continuing operations	33.9	28.3
Net income attributable to Air Products	1,256.8	1,044.9
Income from discontinued operations	—	(42.2)
Income from continuing operations attributable to Air Products	1,256.8	1,002.7
Adjustments to reconcile income to cash provided by operating activities:		
Depreciation and amortization	789.2	713.5
Deferred income taxes	37.8	(86.9)
Tax reform repatriation	49.4	310.3
Facility closure	29.0	—
Undistributed earnings of unconsolidated affiliates	(56.9)	(34.8)
Gain on sale of assets and investments	(17.5)	(5.2)
Share-based compensation	31.0	30.4
Noncurrent capital lease receivables	71.7	73.7
Other adjustments	(.7)	(23.2)
Working capital changes that provided (used) cash, excluding effects of acquisitions:		
Trade receivables	(139.5)	(50.5)
Inventories	(13.5)	16.0
Other receivables	70.6	85.5
Payables and accrued liabilities	(94.8)	(164.9)
Other working capital	(9.2)	(10.4)
Cash Provided by Operating Activities	2,003.4	1,856.2
Investing Activities		
Additions to plant and equipment	(1,507.6)	(1,158.1)
Acquisitions, less cash acquired	(107.0)	(320.2)
Investment in and advances to unconsolidated affiliates	(15.7)	—
Proceeds from sale of assets and investments	8.8	45.8
Purchases of investments	(5.3)	(349.8)
Proceeds from investments	190.5	745.2
Other investing activities	.8	5.3
Cash Used for Investing Activities	(1,435.5)	(1,031.8)
Financing Activities		
Long-term debt proceeds	—	.5
Payments on long-term debt	(5.4)	(418.2)
Net increase (decrease) in commercial paper and short-term borrowings	37.7	(46.1)
Dividends paid to shareholders	(738.4)	(656.6)
Proceeds from stock option exercises	63.3	58.2
Other financing activities	(18.0)	(35.6)
Cash Used for Financing Activities	(660.8)	(1,097.8)
Discontinued Operations		
Cash used for operating activities	—	(12.8)
Cash provided by investing activities	—	18.6
Cash provided by financing activities	—	—
Cash Provided by Discontinued Operations	—	5.8
Effect of Exchange Rate Changes on Cash	(1.6)	(19.5)
Decrease in cash and cash items	(94.5)	(287.1)
Cash and Cash items – Beginning of Year	2,791.3	3,273.6
Cash and Cash Items – End of Period	$2,696.8	$2,986.5

The accompanying notes are an integral part of these statements.

AIR PRODUCTS AND CHEMICALS, INC. and Subsidiaries
CONSOLIDATED STATEMENTS OF EQUITY
(Unaudited)

	Nine Months Ended 30 June 2019							
(Millions of dollars, except for per share data)	Common Stock	Capital in Excess of Par Value	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Treasury Stock	Air Products Shareholders' Equity	Non-controlling Interests	Total Equity
Balance at 30 September 2018	$249.4	$1,029.3	$13,409.9	($1,741.9)	($2,089.2)	$10,857.5	$318.8	$11,176.3
Net income	—	—	1,256.8	—	—	1,256.8	33.9	1,290.7
Other comprehensive income (loss)	—	—	—	(39.5)	—	(39.5)	(1.4)	(40.9)
Dividends on common stock (per share $3.42)	—	—	(752.6)	—	—	(752.6)	—	(752.6)
Dividends to noncontrolling interests	—	—	—	—	—	—	(10.0)	(10.0)
Share-based compensation	—	30.5	—	—	—	30.5	—	30.5
Issuance of treasury shares for stock option and award plans	—	1.5	—	—	55.5	57.0	—	57.0
Cumulative change in accounting principle	—	—	(17.1)	—	—	(17.1)	—	(17.1)
Other equity transactions	—	(1.4)	(5.1)	—	—	(6.5)	(.8)	(7.3)
Balance at 30 June 2019	$249.4	$1,059.9	$13,891.9	($1,781.4)	($2,033.7)	$11,386.1	$340.5	$11,726.6

	Nine Months Ended 30 June 2018							
(Millions of dollars, except for per share data)	Common Stock	Capital in Excess of Par Value	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Treasury Stock	Air Products Shareholders' Equity	Non-controlling Interests	Total Equity
Balance at 30 September 2017	$249.4	$1,001.1	$12,846.6	($1,847.4)	($2,163.5)	$10,086.2	$99.3	$10,185.5
Net income attributable to Air Products	—	—	1,044.9	—	—	1,044.9	28.3	1,073.2
Other comprehensive income (loss)	—	—	—	(30.4)	—	(30.4)	(10.4)	(40.8)
Dividends on common stock (per share $3.15)	—	—	(690.3)	—	—	(690.3)	—	(690.3)
Dividends to noncontrolling interests	—	—	—	—	—	—	(26.0)	(26.0)
Share-based compensation	—	29.7	—	—	—	29.7	—	29.7
Issuance of treasury shares for stock option and award plans	—	(12.3)	—	—	57.8	45.5	—	45.5
Lu'An joint venture	—	—	—	—	—	—	227.4	227.4
Other equity transactions	—	1.3	(.9)	—	—	.4	5.4	5.8
Balance at 30 June 2018	$249.4	$1,019.8	$13,200.3	($1,877.8)	($2,105.7)	$10,486.0	$324.0	$10,810.0

AIR PRODUCTS AND CHEMICALS, INC. and Subsidiaries
CONSOLIDATED STATEMENTS OF EQUITY (cont.)
(Unaudited)

	Three Months Ended 30 June 2019							
(Millions of dollars, except for per share data)	Common Stock	Capital in Excess of Par Value	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Treasury Stock	Air Products Shareholders' Equity	Non-controlling Interests	Total Equity
Balance at 31 March 2019	$249.4	$1,047.7	$13,662.0	($1,744.8)	($2,048.6)	$11,165.7	$337.7	$11,503.4
Net income	—	—	488.0	—	—	488.0	12.2	500.2
Other comprehensive income (loss)	—	—	—	(36.6)	—	(36.6)	(5.6)	(42.2)
Dividends on common stock (per share $1.16)	—	—	(255.1)	—	—	(255.1)	—	(255.1)
Dividends to noncontrolling interests	—	—	—	—	—	—	(3.0)	(3.0)
Share-based compensation	—	9.8	—	—	—	9.8	—	9.8
Issuance of treasury shares for stock option and award plans	—	2.4	—	—	14.9	17.3	—	17.3
Other equity transactions	—	—	(3.0)	—	—	(3.0)	(.8)	(3.8)
Balance at 30 June 2019	$249.4	$1,059.9	$13,891.9	($1,781.4)	($2,033.7)	$11,386.1	$340.5	$11,726.6

	Three Months Ended 30 June 2018							
(Millions of dollars, except for per share data)	Common Stock	Capital in Excess of Par Value	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Treasury Stock	Air Products Shareholders' Equity	Non-controlling Interests	Total Equity
Balance at 31 March 2018	$249.4	$1,011.2	$12,966.6	($1,535.3)	($2,111.1)	$10,580.8	$112.4	$10,693.2
Net income	—	—	473.9	—	—	473.9	14.0	487.9
Other comprehensive income (loss)	—	—	—	(342.5)	—	(342.5)	(14.5)	(357.0)
Dividends on common stock (per share $1.10)	—	—	(241.2)	—	—	(241.2)	—	(241.2)
Dividends to noncontrolling interests	—	—	—	—	—	—	(15.4)	(15.4)
Share-based compensation	—	7.9	—	—	—	7.9	—	7.9
Issuance of treasury shares for stock option and award plans	—	—	—	—	5.4	5.4	—	5.4
Lu'An joint venture	—	—	—	—	—	—	227.4	227.4
Other equity transactions	—	.7	1.0	—	—	1.7	.1	1.8
Balance at 30 June 2018	$249.4	$1,019.8	$13,200.3	($1,877.8)	($2,105.7)	$10,486.0	$324.0	$10,810.0

The accompanying notes are an integral part of these statements.

AIR PRODUCTS AND CHEMICALS, INC. and Subsidiaries
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
(Unaudited)

(Millions of dollars unless otherwise indicated, except for share and per share data)

1. BASIS OF PRESENTATION AND MAJOR ACCOUNTING POLICIES

The interim consolidated financial statements of Air Products and Chemicals, Inc. and its subsidiaries ("we," "our," "us," the "Company," "Air Products," or "registrant") included herein have been prepared by us, without audit, pursuant to the rules and regulations of the Securities and Exchange Commission (SEC). Certain information and footnote disclosures normally included in financial statements prepared in accordance with U.S. generally accepted accounting principles (GAAP) have been condensed or omitted pursuant to such rules and regulations. In our opinion, the accompanying statements reflect adjustments necessary to present fairly the financial position, results of operations, and cash flows for those periods indicated and contain adequate disclosure to make the information presented not misleading. Adjustments included herein are of a normal, recurring nature unless otherwise disclosed in the notes. The notes to the interim consolidated financial statements, unless otherwise indicated, are on a continuing operations basis.

To fully understand the basis of presentation, the consolidated financial statements and related notes included herein should be read in conjunction with the consolidated financial statements and notes thereto included in our 2018 Form 10-K. Results of operations for interim periods are not necessarily indicative of the results of operations for a full year.

Refer to our 2018 Form 10-K for a description of major accounting policies. In fiscal year 2019, these policies were impacted by the implementation of certain new accounting guidance, including the adoption of Accounting Standards Codification (ASC) Topic 606, Revenue from Contracts with Customers, and all related amendments ("the new revenue standard"). We adopted the new revenue standard as of 1 October 2018 under the modified retrospective approach. Comparative prior year information has not been restated and continues to be reported under the accounting standards in effect for those periods. Our updated revenue recognition policy, which reflects the principles under the new revenue standard, is discussed below.

Other than the adoption of new accounting guidance as discussed in Note 2, New Accounting Guidance, there have been no notable changes to our accounting policies during the first nine months of fiscal year 2019.

Certain prior year information has been reclassified to conform to the fiscal year 2019 presentation.

Revenue Recognition

The Company recognizes revenue when or as performance obligations are satisfied, which occurs when control is transferred to the customer.

We determine the transaction price of our contracts based on the amount of consideration to which we expect to be entitled to receive in exchange for the goods or services provided. Our contracts within the scope of revenue guidance do not contain payment terms that include a significant financing component.

Sales returns and allowances are not a business practice in the industry.

Our sale of gas contracts are either accounted for over time during the period in which we deliver or make available the agreed upon quantity of goods or at a point in time when the customer receives and obtains control of the product, which generally occurs upon delivery. We generally recognize revenue from our sale of gas contracts based on the right to invoice practical expedient.

Our sale of equipment contracts are generally comprised of a single performance obligation as the individual promised goods or services contained within the contracts are integrated with or dependent upon other goods or services in the contract for a single output to the customer. Revenue from our sale of equipment contracts is generally recognized over time as we have an enforceable right to payment for performance completed to date and our performance under the contract terms does not create an asset with alternative use. We recognize these contracts using a cost incurred input method by which costs incurred to date relative to total estimated costs at completion are used to measure progress toward satisfying performance obligations.

Amounts billed for shipping and handling fees are classified as sales in the consolidated income statements. Shipping and handling activities for our sale of equipment contracts may be performed after the customer obtains control of the promised goods. In these cases, we have elected to apply the practical expedient to account for shipping and handling as activities to fulfill the promise to transfer the goods. For our sale of gas contracts, control generally transfers to the customer upon delivery.

Amounts billed for sales and use taxes, value-added taxes, and certain excise and other specific transactional taxes imposed on revenue-producing transactions are presented on a net basis and excluded from sales in the consolidated income statements.

For additional information, refer to Note 3, Revenue Recognition.

2. NEW ACCOUNTING GUIDANCE

Accounting Guidance Implemented in Fiscal Year 2019

Revenue Recognition

In May 2014, the Financial Accounting Standards Board (FASB) issued the new revenue standard, which is based on the principle that revenue is recognized in an amount expected to be collected and to which the entity expects to be entitled in exchange for the transfer of goods or services. We adopted this guidance under the modified retrospective approach as of 1 October 2018. Upon adoption, we no longer present "Contracts in progress, less progress billings" on our consolidated balance sheets and have expanded disclosure requirements. Otherwise, adoption of this guidance did not impact our consolidated financial statements, and no adjustment was necessary to opening retained earnings. Accordingly, sales presented during the first nine months of fiscal year 2019 would not change if presented under accounting standards in effect prior to 1 October 2018.

For additional information, including the balance sheet impacts of no longer presenting "Contracts in progress, less progress billings" and expanded disclosures under the new revenue standard, refer to Note 3, Revenue Recognition.

Cash Flow Statement Classification

In August 2016, the FASB issued guidance to reduce diversity in practice related to the classification of certain cash receipts and cash payments in the statement of cash flows. We adopted this guidance retrospectively in the first quarter of fiscal year 2019 and elected to use the cumulative earnings approach to determine the classification of distributions received from equity affiliates. As a result, we reclassified $7.1 of net activity from operating activities to investing activities for the nine months ended 30 June 2018.

Intra-Entity Asset Transfers

In October 2016, the FASB issued guidance on accounting for the income tax effects of intra-entity transfers of assets other than inventory. Previous guidance prohibited the recognition of current and deferred income taxes for an intra-entity asset transfer until the asset had been sold to an outside party. Under the new guidance, the income tax consequences of an intra-entity asset transfer are recognized when the transfer occurs. We adopted this guidance in the first quarter of fiscal year 2019 on a modified retrospective basis through a cumulative-effect adjustment of $17.1 that decreased retained earnings as of 1 October 2018.

New Accounting Guidance to be Implemented

Leases

In February 2016, the FASB issued guidance that requires lessees to recognize a right-of-use asset and lease liability on the balance sheet for all leases, including operating leases, with a term in excess of 12 months. The guidance also expands the quantitative and qualitative disclosure requirements.

The Company is the lessee under various agreements for real estate, distribution equipment, aircraft, and vehicles that are currently accounted for as operating leases. The new guidance will require the Company to record all leases, including operating leases, on the balance sheet with a right-of-use asset and corresponding liability for future payment obligations.

We will adopt this guidance in fiscal year 2020 using a modified retrospective approach with the election to apply the guidance as of the adoption date instead of the earliest comparative period presented in the consolidated financial statements.

We expect to elect the package of practical expedients permitted under the transition guidance, which among other things, allows us to carry forward the historical lease classification. We intend to also elect the practical expedient related to land easements, allowing us to carry forward our current accounting treatment for land easements on existing agreements. In addition, we expect to elect the hindsight practical expedient to determine the reasonably certain lease term for existing leases as of the date of adoption.

We are evaluating the impact the guidance will have on our consolidated financial statements. In addition, we are implementing a new software application to administer the accounting and disclosure requirements under the new guidance.

Credit Losses on Financial Instruments

In June 2016, the FASB issued guidance on the measurement of credit losses, which requires measurement and recognition of expected credit losses for financial assets, including trade receivables and capital lease receivables, held at the reporting date based on historical experience, current conditions, and reasonable and supportable forecasts. The method to determine a loss is different from the existing guidance, which requires a credit loss to be recognized when it is probable. The guidance is effective beginning in fiscal year 2021, with early adoption permitted beginning in fiscal year 2020. We are evaluating the impact this guidance will have on our consolidated financial statements.

Hedging Activities

In August 2017, the FASB issued guidance on hedging activities to expand the related presentation and disclosure requirements, change how companies assess effectiveness, and eliminate the separate measurement and reporting of hedge ineffectiveness. The guidance also enables more hedging strategies to become eligible for hedge accounting. The guidance is effective in fiscal year 2020, with early adoption permitted. For cash flow and net investment hedges existing at the date of adoption, an entity should apply a cumulative-effect adjustment to eliminate the separate measurement of ineffectiveness within equity as of the beginning of the fiscal year the guidance is adopted. The amended presentation and disclosure guidance is applied prospectively. We are evaluating the impact this guidance will have on our consolidated financial statements and expect to adopt this guidance at the beginning of fiscal year 2020.

Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income

In February 2018, the FASB issued guidance allowing a reclassification from accumulated other comprehensive income to retained earnings for stranded tax effects resulting from the U.S. Tax Cuts and Jobs Act. The guidance is effective in fiscal year 2020, with early adoption permitted, including adoption in an interim period. If elected, the reclassification can be applied in either the period of adoption or retrospectively to the period of the enactment of the U.S. Tax Cuts and Jobs Act (i.e., our first quarter of fiscal year 2018). We are evaluating the adoption alternatives and the impact this guidance will have on our consolidated financial statements.

Fair Value Measurement Disclosures

In August 2018, the FASB issued guidance that modifies the disclosure requirements for fair value measurements. The guidance is effective in fiscal year 2021, with early adoption permitted. Certain amendments must be applied prospectively while other amendments must be applied retrospectively. We are evaluating the impact this guidance will have on the disclosures in the notes to our consolidated financial statements.

Retirement Benefit Disclosures

In August 2018, the FASB issued guidance that modifies the disclosure requirements for employers that sponsor defined benefit pension or other postretirement benefit plans. The guidance is effective in fiscal year 2021, with early adoption permitted, and must be applied on a retrospective basis. We are evaluating the impact this guidance will have on the disclosures in the notes to our consolidated financial statements.

Cloud Computing Implementation Costs

In August 2018, the FASB issued guidance that aligns the capitalization requirements for implementation costs incurred in a hosting arrangement that is a service contract with the existing capitalization requirements for implementation costs incurred to develop or obtain internal-use software. The guidance is effective in fiscal year 2021, with early adoption permitted, and may be applied either prospectively or retrospectively. We are evaluating the impact this guidance will have on our consolidated financial statements.

Related Party Guidance for Variable Interest Entities

In October 2018, the FASB issued an update that amends the guidance for determining whether a decision-making fee is a variable interest. The amendments require consideration of indirect interests held through related parties under common control on a proportional basis rather than as the equivalent of a direct interest in its entirety as required under current accounting standards. The guidance is effective in fiscal year 2021, with early adoption permitted. The amendments must be applied retrospectively with a cumulative-effect adjustment to retained earnings at the beginning of the earliest period presented. We are evaluating the impact this guidance will have on our consolidated financial statements.

3. REVENUE RECOGNITION

Nature of Goods and Services

The principal activities from which the Company generates its sales from its contracts with customers, separated between our regional industrial gases businesses and industrial gases equipment businesses, are described below with their respective revenue recognition policies. For an overall summary of these policies and discussion on payment terms and presentation, refer to Note 1, Basis of Presentation and Major Accounting Policies.

Industrial Gases – Regional

Our regional industrial gases businesses produce and sell atmospheric gases such as oxygen, nitrogen, and argon (primarily recovered by the cryogenic distillation of air) and process gases such as hydrogen, helium, carbon dioxide, carbon monoxide, syngas, and specialty gases. We distribute gases to our sale of gas customers through different supply modes depending on various factors including the customer's volume requirements and location. Our supply modes are as follows:

> On-Site Gases—Supply mode associated with customers who require large volumes of gases and have relatively constant demand. Gases are produced and supplied by large facilities we construct on or near the customers' facilities or by pipeline systems from centrally located production facilities. These sale of gas contracts generally have 15- to 20- year terms. The Company also delivers smaller quantities of product through small on-site plants (cryogenic or non-cryogenic generators), typically via a 10- to 15- year sale of gas contract. The contracts within this supply mode generally contain fixed monthly charges and/or minimum purchase requirements with price escalation provisions that are generally based on external indices. Revenue associated with this supply mode is generally recognized over time during the period in which we deliver or make available the agreed upon quantity of goods.
>
> Merchant Gases—Supply mode associated with liquid bulk and packaged gases customers. Liquid bulk customers receive delivery of product in liquid or gaseous form by tanker or tube trailer. The product is stored, usually in its liquid state, in equipment typically designed and installed by the Company at the customer's site for vaporizing into a gaseous state as needed. Packaged gases customers receive small quantities of product delivered in either cylinders or dewars. Both liquid bulk and packaged gases sales do not contain minimum purchase requirements as they are governed by contracts and/or purchase orders based on the customer's requirements. These contracts contain stated terms that are generally 5 years or less. Performance obligations associated with this supply mode are satisfied at a point in time when the customer receives and obtains control of the product, which generally occurs upon delivery.

The timing of revenue recognition for our regional industrial gases businesses is generally consistent with our right to invoice the customer. Variable components of consideration that may not be resolved within the month, such as the ability to earn an annual bonus or incur a penalty, are more relevant to on-site contracts and are considered constrained as they can be impacted by a single significant event such as a plant outage, which could occur at the end of a contract period. We consider contract modifications on an individual basis to determine appropriate accounting treatment. However, contract modifications are generally accounted for prospectively as they relate to distinct goods or services associated with future periods of performance.

We mitigate energy and natural gas price risk contractually through pricing formulas, surcharges, and cost pass-through arrangements.

Industrial Gases – Equipment

The Company designs and manufactures equipment for air separation, hydrocarbon recovery and purification, natural gas liquefaction (LNG), and liquid helium and liquid hydrogen transport and storage. The Industrial Gases – Global and the Corporate and other segments serve our sale of equipment customers.

Our sale of equipment contracts are generally comprised of a single performance obligation as the individual promised goods or services contained within the contracts are integrated with or dependent upon other goods or services in the contract for a single output to the customer.

Revenue from our sale of equipment contracts is generally recognized over time as we have an enforceable right to payment for performance completed to date and our performance under the contract terms does not create an asset with alternative use. Otherwise, sale of equipment contracts are satisfied at the point in time the customer obtains control of the equipment, which is generally determined based on the shipping terms of the contract. For contracts recognized over time, we primarily recognize revenue using a cost incurred input method by which costs incurred to date relative to total estimated costs at completion are used to measure progress toward satisfying performance obligations. Costs incurred include material, labor, and overhead costs and represent work contributing and proportionate to the transfer of control to the customer.

Since our contracts are generally comprised of a single performance obligation, contract modifications are typically accounted for as part of the existing contract and are recognized as a cumulative adjustment for the inception-to-date effect of such change.

Disaggregation of Revenue

The table below presents our consolidated sales disaggregated by each of the supply modes described above for each of our reporting segments. We believe this presentation best depicts the nature, timing, type of customer, and contract terms for our sales.

	Industrial Gases–Americas	Industrial Gases–EMEA	Industrial Gases–Asia	Industrial Gases–Global	Corporate and other	Total	%
Three Months Ended 30 June 2019							
On-site	$537.1	$165.0	$402.9	$—	$—	$1,105.0	50%
Merchant	418.2	329.6	276.5	—	—	1,024.3	46%
Sale of Equipment	—	—	—	57.9	36.8	94.7	4%
Total	**$955.3**	**$494.6**	**$679.4**	**$57.9**	**$36.8**	**$2,224.0**	**100%**

	Industrial Gases–Americas	Industrial Gases–EMEA	Industrial Gases–Asia	Industrial Gases–Global	Corporate and other	Total	%
Nine Months Ended 30 June 2019							
On-site	$1,714.0	$565.8	$1,169.9	$—	$—	$3,449.7	52%
Merchant	1,222.2	947.4	761.7	—	—	2,931.3	44%
Sale of Equipment	—	—	—	179.9	74.8	254.7	4%
Total	**$2,936.2**	**$1,513.2**	**$1,931.6**	**$179.9**	**$74.8**	**$6,635.7**	**100%**

Approximately 5% and 4% of total consolidated sales for the three and nine months ended 30 June 2019, respectively, was associated with lease revenue relating to our on-site supply mode and therefore not within the scope of the new revenue standard.

Remaining Performance Obligations

As of 30 June 2019, the transaction price allocated to remaining performance obligations is estimated to be approximately $14 billion. This amount includes fixed-charge contract provisions associated with our on-site and sale of equipment supply modes. We estimate that approximately half of this revenue will be recognized over approximately the next five years and the balance thereafter.

Expected revenue associated with new on-site plants that are not yet onstream is excluded from this amount. In addition, this amount excludes consideration associated with contracts determined to be leases, those with an expected duration of less than one year, and variable consideration for which we recognize revenue at the amount to which we have the right to invoice, including pass-through costs related to energy and natural gas.

In the future, actual amounts will differ due to events outside of our control, including but not limited to inflationary price escalations, currency exchange rates, and terminated or renewed contracts.

Contract Balances

Upon adoption of the new revenue standard, we no longer present "Contracts in progress, less progress billings" on our consolidated balance sheets. The balance as of 30 September 2018 has been reclassified to "Other receivables and current assets" within this quarterly report.

Our sale of equipment contracts generally contain a single performance obligation which, as discussed below, results in presentation of either a contract asset or contract liability.

The table below summarizes the balance sheet impacts of no longer presenting "Contracts in progress, less progress billings" upon adoption of the new revenue standard on 1 October 2018:

	30 September 2018	New Revenue Standard Adjustments	1 October 2018
Assets			
Current Assets			
Cash and cash items	$2,791.3	$—	$2,791.3
Short-term investments	184.7	—	184.7
Trade receivables, net	1,207.2	—	1,207.2
Inventories	396.1	—	396.1
Contracts in progress, less progress billings	77.5	(77.5)	—
Prepaid expenses	129.6	—	129.6
Other receivables and current assets	295.8	103.7	399.5
Total Current Assets	5,082.2	26.2	5,108.4
Total Noncurrent Assets	14,096.1	—	14,096.1
Total Assets	$19,178.3	$26.2	$19,204.5
Liabilities and Equity			
Current Liabilities			
Payables and accrued liabilities	$1,817.8	$26.2	$1,844.0
Accrued income taxes	59.6	—	59.6
Short-term borrowings	54.3	—	54.3
Current portion of long-term debt	406.6	—	406.6
Total Current Liabilities	2,338.3	26.2	2,364.5
Total Noncurrent Liabilities	5,663.7	—	5,663.7
Total Liabilities	8,002.0	26.2	8,028.2
Total Equity	11,176.3	—	11,176.3
Total Liabilities and Equity	$19,178.3	$26.2	$19,204.5

The table below details balances arising from contracts with customers as of our most recent balance sheet date and our date of adoption:

	30 June 2019	1 October 2018
Assets		
Contract assets – current	$43.0	$53.0
Contract fulfillment costs – current	66.4	50.7
Liabilities		
Contract liabilities – current	181.1	174.5
Contract liabilities – noncurrent	52.8	53.5

Contract assets and liabilities result from differences in timing of revenue recognition and customer invoicing. These balances are reported on the consolidated balance sheets on a contract-by-contract basis at the end of each reporting period.

Contract assets primarily relate to our sale of equipment contracts for which revenue is recognized over time. These balances represent unbilled revenue, which occurs when revenue recognized under the measure of progress exceeds the amount invoiced to our customers. Our ability to invoice the customer for contract asset balances is not only based on the passage of time, but also the achievement of certain contractual milestones. Our contract assets are included within "Other receivables and current assets" on the consolidated balance sheets.

Contract fulfillment costs primarily include deferred costs related to sale of equipment projects that cannot be inventoried and for which we expect to recognize revenue upon transfer of control at project completion or costs related to fulfilling a specific anticipated contract. Contract fulfillment costs are generally classified as current and are included within "Other receivables and current assets" on the consolidated balance sheets.

Costs to obtain a contract, or contract acquisition costs, are capitalized only after we have established a contract with the customer. We elected to apply the practical expedient to expense these costs as they are incurred if the amortization period of the asset that would have otherwise been recognized is one year or less. Our contract acquisition costs capitalized as of 30 June 2019 were not material.

Contract liabilities include advance payments or right to consideration prior to performance under the contract. Contract liabilities are recognized as revenue when or as we perform under the contract. Changes in our contract liability balances primarily relate to sale of equipment projects. During the nine months ended 30 June 2019, we recognized approximately $100 in revenue associated with sale of equipment contracts that was included within our contract liabilities as of 30 September 2018. The current and noncurrent portions of our contract liabilities are included within "Payables and accrued liabilities" and "Other noncurrent liabilities" on our consolidated balance sheets, respectively. Advanced payments from our customers do not represent a significant financing component as these payments are intended for purposes other than financing, such as to meet working capital demands or to protect us from our customer failing to meet its obligations under the terms of the contract.

Changes in contract asset and liability balances during the nine months ended 30 June 2019 were not materially impacted by any other factors.

4. DISCONTINUED OPERATIONS

For the three and nine months ended 30 June 2018, income from discontinued operations, net of tax, on the consolidated income statements was $43.2 and $42.2, respectively. During the third quarter of fiscal year 2018, we recorded an income tax benefit of $25.6 resulting from the resolution of uncertain tax positions taken in conjunction with the disposition of our former European Homecare business in fiscal year 2012. In addition, we recorded an after-tax benefit of $17.6 resulting from the resolution of certain post-closing adjustments associated with the sale of our former Performance Materials Division. The nine months ended 30 June 2018 also includes an after-tax loss of $1.0 related to Energy-from-Waste project exit activities and administrative costs incurred during the first quarter of fiscal year 2018.

5. COST REDUCTION ACTIONS

During the third quarter of fiscal year 2019, we recognized an expense of $25.5 for severance and other benefits associated with the elimination or planned elimination of approximately 300 positions. These actions are expected to drive cost synergies primarily within the Industrial Gases – EMEA and the Industrial Gases – Americas segments. The expense has been reflected as “Cost reduction actions” on the consolidated income statements and was excluded from segment operating income for the three and nine months ended 30 June 2019.

The following table summarizes the carrying amount of the accrual as of 30 June 2019. This amount is reflected on our consolidated balance sheets within "Payables and accrued liabilities."

2019 Charge	$25.5
Cash expenditures	(4.7)
Amount reflected in pension liability	(.3)
Currency translation adjustment	.1
30 June 2019	$20.6

6. ACQUISITIONS

Fiscal Year 2019 Business Combinations

Exchange of Equity Affiliate Investments

As of 30 September 2018, we held 50% ownership interests in High-Tech Gases (Beijing) Co., Ltd. ("High-Tech Gases") and WuXi Hi-Tech Gas Co., Ltd. ("WuXi"), both of which were joint ventures with another industrial gas company in China. We accounted for these arrangements as equity method investments in our Industrial Gases – Asia segment through 30 April 2019.

On 1 May 2019, we acquired our partner's 50% interest in WuXi in exchange for our 50% interest in High-Tech Gases. The purpose of the exchange was to simplify the current structure of the two entities and to allow each party to serve its customers more efficiently in their respective geographies. Subsequent to the acquisition date, we own 100% of WuXi and no longer have an equity interest in High-Tech Gases.

The exchange resulted in a net gain of $29.1, of which $15.0 resulted from the revaluation of our previously held equity interest in WuXi to its acquisition date fair value and $14.1 resulted from the disposition of our interest in High-Tech Gases. The net gain has been reflected as "Gain on exchange of equity affiliate investments" on our consolidated income statements and was excluded from segment operating income for the three and nine months ended 30 June 2019. There were no tax impacts on the exchange.

We revalued our previously held 50% equity interest in WuXi based on an estimated acquisition date fair value of $27.0. We calculated this fair value using a discounted cash flow analysis under the income approach, which required estimates and assumptions regarding projected revenue growth, customer attrition rates, profit margin, and discount rate.

The acquisition of the remaining interest in WuXi was accounted for as a business combination. The results of this business have been consolidated within our Industrial Gases – Asia segment as of the acquisition date. Upon acquisition, we recognized plant and equipment of $28.0, intangible assets of $27.6, and goodwill of $4.2. The intangible assets were primarily customer relationships, having a weighted-average useful life of approximately 10 years. The goodwill recognized on the transaction, none of which is deductible for tax purposes, was recorded in the Industrial Gases – Asia segment and is attributable to expected growth synergies. The acquisition did not materially impact our consolidated income statements for the periods presented.

ACP Europe SA Acquisition

On 1 March 2019, we completed the acquisition of ACP Europe SA ("ACP"), the largest independent carbon dioxide business in Continental Europe, for an aggregate purchase price, net of cash acquired, of $106.3. We expect this acquisition to enable us to better serve existing merchant customers and pursue new industrial gas growth opportunities across additional European geographies. The results of this business are consolidated within our Industrial Gases – EMEA segment and did not materially impact our consolidated income statements for the periods presented.

The acquisition of ACP was accounted for as a business combination and resulted in the recognition of plant and equipment of $74.6 and goodwill of $38.0, partially offset by net liabilities acquired. The goodwill recognized on the transaction, none of which is deductible for tax purposes, was recorded in the Industrial Gases – EMEA segment and is attributable to expected growth and cost synergies.

The acquired assets and liabilities resulting from our 2019 business combinations were recorded at their estimated fair values, which were calculated based on a preliminary purchase price allocation prepared by management. We may record adjustments to these assets and liabilities during the preliminary purchase price allocation period, which could be up to one year from the acquisition date.

Fiscal Year 2018 Asset Acquisition

On 26 April 2018 ("the acquisition date"), we completed the formation of Air Products Lu An (Changzhi) Co., Ltd. ("the JV"), a 60%-owned joint venture with Lu'An Clean Energy Company ("Lu'An"). The JV receives coal, steam, and power from Lu’An and supplies syngas to Lu’An under a long-term onsite contract. The results of the JV are consolidated within the Industrial Gases – Asia segment.

Air Products contributed four large air separation units to the JV with a carrying value of approximately $300, and the JV acquired gasification and syngas clean-up assets from Lu’An for 7.9 billion RMB (approximately $1.2 billion). As a result, the carrying value of the plant and equipment of the JV was approximately $1.5 billion at the acquisition date.

We accounted for the acquisition of the gasification and syngas clean-up assets as an asset acquisition. In connection with closing the acquisition, we paid net cash of approximately 1.5 billion RMB ($235) and issued equity of 1.4 billion RMB ($227) to Lu'An for their noncontrolling interest in the JV.

In addition, Lu'An made a loan of 2.6 billion RMB to the JV with regularly scheduled principal and interest payments at a fixed interest rate of 5.5%, and we established a liability of 2.3 billion RMB for cash payments expected to be made to or on behalf of Lu'An in 2019. Long-term debt payable to Lu'An of $321.6 and $384.3 as of 30 June 2019 and 30 September 2018, respectively, is presented on the consolidated balance sheets as "Long-term debt – related party." As of 30 June 2019, $62.9 of the loan is reflected within "Current portion of long-term debt." The expected remaining cash payments are presented within "Payables and accrued liabilities" and were $80.8 and $330.0 as of 30 June 2019 and 30 September 2018, respectively.

The issuance of equity to Lu'An for their noncontrolling interest, the long-term debt, and the liability for the remaining cash payments were noncash transactions that have been excluded from the consolidated statement of cash flows for the nine months ended 30 June 2018.

Fiscal Year 2018 Business Combinations

During the first nine months of fiscal year 2018, we completed eight acquisitions that were accounted for as business combinations. These acquisitions had an aggregate purchase price, net of cash acquired, of $355.4. The largest of the acquisitions was completed during the first quarter of fiscal year 2018 and primarily consisted of three air separation units serving onsite and merchant customers in China, which strengthened our position in the region. The results of this business are consolidated within our Industrial Gases – Asia segment.

7. INVENTORIES

The components of inventories are as follows:

	30 June 2019	30 September 2018
Finished goods	$135.1	$125.4
Work in process	29.9	21.2
Raw materials, supplies and other	243.3	249.5
Inventories	$408.3	$396.1

8. GOODWILL

Changes to the carrying amount of consolidated goodwill by segment for the nine months ended 30 June 2019 are as follows:

	Industrial Gases– Americas	Industrial Gases– EMEA	Industrial Gases– Asia	Industrial Gases– Global	Corporate and other	Total
Goodwill, net at 30 September 2018	$162.1	$424.4	$171.9	$20.1	$10.4	$788.9
Acquisitions	—	38.0	4.2	—	—	42.2
Currency translation and other	(1.9)	(7.5)	(1.1)	(.2)	—	(10.7)
Goodwill, net at 30 June 2019	$160.2	$454.9	$175.0	$19.9	$10.4	$820.4

	30 June 2019	30 September 2018
Goodwill, gross	$1,212.9	$1,194.7
Accumulated impairment losses(A)	(392.5)	(405.8)
Goodwill, net	$820.4	$788.9

(A) Accumulated impairment losses are attributable to our Latin America reporting unit (LASA) within the Industrial Gases – Americas segment and include the impacts of currency translation.

We review goodwill for impairment annually in the fourth quarter of the fiscal year and whenever events or changes in circumstances indicate that the carrying value of goodwill might not be recoverable.

9. FINANCIAL INSTRUMENTS

Currency Price Risk Management

Our earnings, cash flows, and financial position are exposed to foreign currency risk from foreign currency-denominated transactions and net investments in foreign operations. It is our policy to seek to minimize our cash flow volatility from changes in currency exchange rates. This is accomplished by identifying and evaluating the risk that our cash flows will change in value due to changes in exchange rates and by executing strategies necessary to manage such exposures. Our objective is to maintain economically balanced currency risk management strategies that provide adequate downside protection.

Forward Exchange Contracts

We enter into forward exchange contracts to reduce the cash flow exposure to foreign currency fluctuations associated with highly anticipated cash flows and certain firm commitments, such as the purchase of plant and equipment. We also enter into forward exchange contracts to hedge the cash flow exposure on intercompany loans. This portfolio of forward exchange contracts consists primarily of Euros and U.S. Dollars. The maximum remaining term of any forward exchange contract currently outstanding and designated as a cash flow hedge at 30 June 2019 is 2.3 years.

Forward exchange contracts are also used to hedge the value of investments in certain foreign subsidiaries and affiliates by creating a liability in a currency in which we have a net equity position. The primary currency pair in this portfolio of forward exchange contracts is Euros and U.S. Dollars.

We also utilize forward exchange contracts that are not designated as hedges. These contracts are used to economically hedge foreign currency-denominated monetary assets and liabilities, primarily working capital. The primary objective of these forward exchange contracts is to protect the value of foreign currency-denominated monetary assets and liabilities from the effects of volatility in foreign exchange rates that might occur prior to their receipt or settlement. This portfolio of forward exchange contracts consists of many different foreign currency pairs, with a profile that changes from time to time depending on business activity and sourcing decisions.

The table below summarizes our outstanding currency price risk management instruments:

	30 June 2019		30 September 2018	
	US$ Notional	Years Average Maturity	US$ Notional	Years Average Maturity
Forward Exchange Contracts:				
Cash flow hedges	$2,656.2	0.4	$2,489.1	0.4
Net investment hedges	553.0	1.0	457.5	1.7
Not designated	921.7	0.9	1,736.1	0.8
Total Forward Exchange Contracts	$4,130.9	0.6	$4,682.7	0.7

The notional value of forward exchange contracts not designated decreased from the prior year as a result of maturities.

We also use foreign currency-denominated debt to hedge the foreign currency exposures of our net investment in certain foreign subsidiaries. The designated foreign currency-denominated debt and related accrued interest was €940.4 million ($1,069.6) at 30 June 2019 and €908.8 million ($1,054.6) at 30 September 2018. The designated foreign currency-denominated debt is presented within "Long-term debt" on the consolidated balance sheets.

Debt Portfolio Management

It is our policy to identify, on a continuing basis, the need for debt capital and to evaluate the financial risks inherent in funding the Company with debt capital. Reflecting the result of this ongoing review, our debt portfolio and hedging program are managed with the intent to (1) reduce funding risk with respect to borrowings made by us to preserve our access to debt capital and provide debt capital as required for funding and liquidity purposes, and (2) manage the aggregate interest rate risk and the debt portfolio in accordance with certain debt management parameters.

Interest Rate Management Contracts

We enter into interest rate swaps to change the fixed/variable interest rate mix of our debt portfolio in order to maintain the percentage of fixed- and variable-rate debt within the parameters set by management. In accordance with these parameters, the agreements are used to manage interest rate risks and costs inherent in our debt portfolio. Our interest rate management portfolio generally consists of fixed-to-floating interest rate swaps (which are designated as fair value hedges), pre-issuance interest rate swaps and treasury locks (which hedge the interest rate risk associated with anticipated fixed-rate debt issuances and are designated as cash flow hedges), and floating-to-fixed interest rate swaps (which are designated as cash flow hedges). As of 30 June 2019, the outstanding interest rate swaps were denominated in U.S. Dollars. The notional amount of the interest rate swap agreements is equal to or less than the designated debt being hedged. When interest rate swaps are used to hedge variable-rate debt, the indices of the swaps and the debt to which they are designated are the same. It is our policy not to enter into any interest rate management contracts which lever a move in interest rates on a greater than one-to-one basis.

Cross Currency Interest Rate Swap Contracts

We enter into cross currency interest rate swap contracts when our risk management function deems necessary. These contracts may entail both the exchange of fixed- and floating-rate interest payments periodically over the life of the agreement and the exchange of one currency for another currency at inception and at a specified future date. The contracts are used to hedge either certain net investments in foreign operations or non-functional currency cash flows related to intercompany loans. The current cross currency interest rate swap portfolio consists of fixed-to-fixed swaps primarily between U.S. Dollars and Chinese Renminbi, U.S. Dollars and Indian Rupee, and U.S. Dollars and Chilean Pesos.

The following table summarizes our outstanding interest rate management contracts and cross currency interest rate swaps:

	30 June 2019				30 September 2018			
	US$ Notional	Average Pay %	Average Receive %	Years Average Maturity	US$ Notional	Average Pay %	Average Receive %	Years Average Maturity
Interest rate swaps (fair value hedge)	$600.0	LIBOR	2.60%	0.9	$600.0	LIBOR	2.60%	1.6
Cross currency interest rate swaps (net investment hedge)	$246.6	4.55%	3.09%	2.9	$201.7	4.42%	2.97%	3.1
Cross currency interest rate swaps (cash flow hedge)	$1,063.5	4.85%	2.94%	2.2	$1,052.7	4.99%	2.89%	2.3
Cross currency interest rate swaps (not designated)	$29.6	4.17%	3.61%	4.6	$80.2	4.88%	3.43%	3.9

The table below summarizes the fair value and balance sheet location of our outstanding derivatives:

	Balance Sheet Location	30 June 2019	30 September 2018	Balance Sheet Location	30 June 2019	30 September 2018
Derivatives Designated as Hedging Instruments:						
Forward exchange contracts	Other receivables	$28.3	$24.9	Accrued liabilities	$32.3	$37.0
Interest rate management contracts	Other receivables	14.0	24.3	Accrued liabilities	.6	2.3
Forward exchange contracts	Other noncurrent assets	27.9	19.8	Other noncurrent liabilities	.8	4.6
Interest rate management contracts	Other noncurrent assets	36.1	48.7	Other noncurrent liabilities	7.3	11.6
Total Derivatives Designated as Hedging Instruments		$106.3	$117.7		$41.0	$55.5
Derivatives Not Designated as Hedging Instruments:						
Forward exchange contracts	Other receivables	$7.9	$7.9	Accrued liabilities	$13.4	$14.9
Interest rate management contracts	Other receivables	—	4.0	Accrued liabilities	—	—
Forward exchange contracts	Other noncurrent assets	22.8	16.2	Other noncurrent liabilities	26.1	23.7
Interest rate management contracts	Other noncurrent assets	.7	.3	Other noncurrent liabilities	—	—
Total Derivatives Not Designated as Hedging Instruments		$31.4	$28.4		$39.5	$38.6
Total Derivatives		$137.7	$146.1		$80.5	$94.1

Refer to Note 10, Fair Value Measurements, which defines fair value, describes the method for measuring fair value, and provides additional disclosures regarding fair value measurements.

The table below summarizes the gain or loss related to our cash flow hedges, fair value hedges, net investment hedges, and derivatives not designated as hedging instruments:

	Three Months Ended 30 June							
	Forward Exchange Contracts		Foreign Currency Debt		Other [(A)]		Total	
	2019	2018	2019	2018	2019	2018	2019	2018
Cash Flow Hedges, net of tax:								
Net gain (loss) recognized in OCI (effective portion)	$1.7	($34.4)	$—	$—	$5.8	$61.5	$7.5	$27.1
Net (gain) loss reclassified from OCI to sales/cost of sales (effective portion)	—	1.9	—	—	—	—	—	1.9
Net (gain) loss reclassified from OCI to other income (expense), net (effective portion)	(6.9)	33.7	—	—	(9.7)	(55.6)	(16.6)	(21.9)
Net (gain) loss reclassified from OCI to interest expense (effective portion)	3.1	.8	—	—	.7	2.0	3.8	2.8
Net (gain) loss reclassified from OCI to other income (expense), net (ineffective portion)	(.2)	—	—	—	(.1)	(.5)	(.3)	(.5)
Fair Value Hedges:								
Net gain (loss) recognized in interest expense[(B)]	$—	$—	$—	$—	$2.0	($2.1)	$2.0	($2.1)
Net Investment Hedges, net of tax:								
Net gain (loss) recognized in OCI	($2.1)	$16.2	($11.3)	$44.2	$3.4	$36.9	($10.0)	$97.3
Derivatives Not Designated as Hedging Instruments:								
Net gain (loss) recognized in other income (expense), net[(C)]	($.8)	($.3)	$—	$—	$.7	$2.2	($.1)	$1.9

	Nine Months Ended 30 June							
	Forward Exchange Contracts		Foreign Currency Debt		Other [(A)]		Total	
	2019	2018	2019	2018	2019	2018	2019	2018
Cash Flow Hedges, net of tax:								
Net gain (loss) recognized in OCI (effective portion)	($14.1)	$5.0	$—	$—	($24.1)	$30.4	($38.2)	$35.4
Net (gain) loss reclassified from OCI to sales/cost of sales (effective portion)	.4	6.9	—	—	—	—	.4	6.9
Net (gain) loss reclassified from OCI to other income (expense), net (effective portion)	2.6	(13.2)	—	—	6.5	(23.4)	9.1	(36.6)
Net (gain) loss reclassified from OCI to interest expense (effective portion)	9.4	3.0	—	—	2.0	3.3	11.4	6.3
Net (gain) loss reclassified from OCI to other income (expense), net (ineffective portion)	(.1)	(.5)	—	—	(.1)	(.5)	(.2)	(1.0)
Fair Value Hedges:								
Net gain (loss) recognized in interest expense[(B)]	$—	$—	$—	$—	$4.6	($8.9)	$4.6	($8.9)
Net Investment Hedges, net of tax:								
Net gain (loss) recognized in OCI	$15.9	($6.5)	$15.5	$4.7	$1.3	$2.4	$32.7	$.6
Derivatives Not Designated as Hedging Instruments:								
Net gain (loss) recognized in other income (expense), net[(C)]	($3.1)	($.2)	$—	$—	$.2	($1.3)	($2.9)	($1.5)

(A) Includes the impact on other comprehensive income (OCI) and earnings primarily related to interest rate and cross currency interest rate swaps.

(B) The impact of fair value hedges was largely offset by recognized gains and losses resulting from the impact of changes in related interest rates on outstanding debt.

(C) The impact of the non-designated hedges was largely offset by recognized gains and losses resulting from the impact of changes in exchange rates on assets and liabilities denominated in non-functional currencies.

The amount of unrealized gains and losses related to cash flow hedges as of 30 June 2019 that are expected to be reclassified to earnings in the next twelve months is not material.

The cash flows related to all derivative contracts are reported in the operating activities section of the consolidated statements of cash flows.

Credit Risk-Related Contingent Features

Certain derivative instruments are executed under agreements that require us to maintain a minimum credit rating with both Standard & Poor’s and Moody’s. If our credit rating falls below this threshold, the counterparty to the derivative instruments has the right to request full collateralization on the derivatives’ net liability position. The net liability position of derivatives with credit risk-related contingent features was $25.0 and $33.4 as of 30 June 2019 and 30 September 2018, respectively. Because our current credit rating is above the various pre-established thresholds, no collateral has been posted on these liability positions.

Counterparty Credit Risk Management

We execute financial derivative transactions with counterparties that are highly rated financial institutions, all of which are investment grade at this time. Some of our underlying derivative agreements give us the right to require the institution to post collateral if its credit rating falls below the pre-established thresholds with Standard & Poor’s or Moody’s. The collateral that the counterparties would be required to post was $90.9 and $97.6 as of 30 June 2019 and 30 September 2018, respectively. No financial institution is required to post collateral at this time as all have credit ratings at or above threshold.

10. FAIR VALUE MEASUREMENTS

Fair value is defined as an exit price, or 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.

The fair value hierarchy prioritizes the inputs to valuation techniques used to measure fair value into three broad levels as follows:

Level 1 — Quoted prices (unadjusted) in active markets for identical assets or liabilities.

Level 2 — Inputs that are observable for the asset or liability, either directly or indirectly through market corroboration, for substantially the full term of the asset or liability.

Level 3 — Inputs that are unobservable for the asset or liability based on our own assumptions about the assumptions market participants would use in pricing the asset or liability.

The methods and assumptions used to measure the fair value of financial instruments are as follows:

Short-term Investments

Short-term investments primarily include time deposits and treasury securities with original maturities greater than three months and less than one year. We estimated the fair value of our short-term investments, which approximates carrying value as of the balance sheet date, using level 2 inputs within the fair value hierarchy. Level 2 measurements were based on current interest rates for similar investments with comparable credit risk and time to maturity.

Derivatives

The fair value of our interest rate management contracts and forward exchange contracts are quantified using the income approach and are based on estimates using standard pricing models. These models consider the value of future cash flows as of the balance sheet date, discounted to a present value using discount factors that match both the time to maturity and currency of the underlying instruments. The computation of the fair values of these instruments is generally performed by the Company. These standard pricing models utilize inputs that are derived from or corroborated by observable market data such as interest rate yield curves as well as currency spot and forward rates; therefore, the fair value of our derivatives is classified as a level 2 measurement. On an ongoing basis, we randomly test a subset of our valuations against valuations received from the transaction’s counterparty to validate the accuracy of our standard pricing models. Counterparties to these derivative contracts are highly rated financial institutions.

Refer to Note 9, Financial Instruments, for a description of derivative instruments, including details related to the balance sheet line classifications.

Long-term Debt, Including Related Party

The fair value of our debt is based on estimates using standard pricing models that consider the value of future cash flows as of the balance sheet date, discounted to a present value using discount factors that match both the time to maturity and currency of the underlying instruments. These standard valuation models utilize observable market data such as interest rate yield curves and currency spot rates; therefore, the fair value of our debt is classified as a level 2 measurement. We generally perform the computation of the fair value of these instruments.

The carrying values and fair values of financial instruments were as follows:

	30 June 2019		30 September 2018	
	Carrying Value	Fair Value	Carrying Value	Fair Value
Assets				
Derivatives				
Forward exchange contracts	$86.9	$86.9	$68.8	$68.8
Interest rate management contracts	50.8	50.8	77.3	77.3
Liabilities				
Derivatives				
Forward exchange contracts	$72.6	$72.6	$80.2	$80.2
Interest rate management contracts	7.9	7.9	13.9	13.9
Long-term debt, including current portion and related party	3,739.8	3,816.9	3,758.3	3,788.2

The carrying amounts reported on the consolidated balance sheets for cash and cash items, short-term investments, trade receivables, payables and accrued liabilities, accrued income taxes, and short-term borrowings approximate fair value due to the short-term nature of these instruments. Accordingly, these items have been excluded from the above table.

The following table summarizes assets and liabilities on the consolidated balance sheets that are measured at fair value on a recurring basis:

	30 June 2019				30 September 2018			
	Total	Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3
Assets at Fair Value								
Derivatives								
Forward exchange contracts	$86.9	$—	$86.9	$—	$68.8	$—	$68.8	$—
Interest rate management contracts	50.8	—	50.8	—	77.3	—	77.3	—
Total Assets at Fair Value	$137.7	$—	$137.7	$—	$146.1	$—	$146.1	$—
Liabilities at Fair Value								
Derivatives								
Forward exchange contracts	$72.6	$—	$72.6	$—	$80.2	$—	$80.2	$—
Interest rate management contracts	7.9	—	7.9	—	13.9	—	13.9	—
Total Liabilities at Fair Value	$80.5	$—	$80.5	$—	$94.1	$—	$94.1	$—

11. RETIREMENT BENEFITS

The components of net periodic benefit cost for our defined benefit pension plans for the three and nine months ended 30 June 2019 and 2018 were as follows:

	Pension Benefits			
	2019		2018	
Three Months Ended 30 June	U.S.	International	U.S.	International
Service cost	$5.4	$4.8	$6.4	$6.5
Interest cost	28.2	9.0	26.8	9.4
Expected return on plan assets	(43.2)	(18.9)	(50.4)	(20.6)
Prior service cost amortization	.3	—	.4	—
Actuarial loss amortization	16.3	2.7	21.8	10.2
Settlements	.3	—	1.5	—
Special termination benefits	—	—	—	—
Other	—	.2	—	.3
Net Periodic Benefit Cost	$7.3	($2.2)	$6.5	$5.8

	Pension Benefits			
	2019		2018	
Nine Months Ended 30 June	U.S.	International	U.S.	International
Service cost	$16.1	$14.6	$19.2	$19.4
Interest cost	85.0	27.0	80.3	28.2
Expected return on plan assets	(129.4)	(57.0)	(151.2)	(61.9)
Prior service cost amortization	.9	.1	1.2	—
Actuarial loss amortization	48.9	8.3	65.7	30.5
Settlements	6.1	.2	4.8	—
Special termination benefits	.7	—	.4	—
Other	—	.6	—	.9
Net Periodic Benefit Cost	$28.3	($6.2)	$20.4	$17.1

Our service costs are primarily included within "Cost of sales" and "Selling and administrative" on our consolidated income statements. The amount of service costs capitalized in fiscal years 2019 and 2018 was not material. The non-service related costs, including pension settlement losses, are presented outside operating income within "Other non-operating income (expense), net."

Certain of our pension plans provide for a lump sum benefit payment option at the time of retirement, or for corporate officers, six months after their retirement date. A participant’s vested benefit is considered settled upon cash payment of the lump sum. We recognize pension settlements to accelerate recognition of actuarial gains or losses deferred in accumulated other comprehensive loss when cash payments exceed the sum of the service and interest cost components of net periodic benefit cost of the plan for the fiscal year. Pension settlements are reflected on our consolidated income statements within “Other non-operating income (expense), net.” For the nine months ended 30 June 2019, we recognized pension settlement losses of $6.3, of which $5.0 associated with the U.S. Supplementary Pension Plan was recognized during the second quarter.

For the nine months ended 30 June 2019 and 2018, our cash contributions to funded pension plans and benefit payments under unfunded pension plans were $31.0 and $43.0, respectively. Total contributions for fiscal year 2019 are expected to be approximately $45 to $65. During fiscal year 2018, total contributions were $68.3.

U.K. Lloyds Pensions Equalization Ruling

On 26 October 2018, the United Kingdom High Court issued a ruling related to the equalization of pension plan participants' benefits for the gender effects of Guaranteed Minimum Pensions. As a result of this ruling, we estimated the impact of retroactively increasing benefits in our U.K. plan in accordance with the High Court ruling. We treated the additional benefits as a prior service cost, which resulted in an increase to our projected benefit obligation and accumulated other comprehensive loss of $4.7 during the first quarter of fiscal year 2019. We will amortize this cost over the average remaining life expectancy of the U.K. participants. Given the immaterial effect on the U.K. plan's projected benefit, an interim remeasurement was not performed.

12. COMMITMENTS AND CONTINGENCIES

Litigation

We are involved in various legal proceedings, including commercial, competition, environmental, health, safety, product liability, and insurance matters. In September 2010, the Brazilian Administrative Council for Economic Defense (CADE) issued a decision against our Brazilian subsidiary, Air Products Brasil Ltda., and several other Brazilian industrial gas companies for alleged anticompetitive activities. CADE imposed a civil fine of R$179.2 million (approximately $47 at 30 June 2019) on Air Products Brasil Ltda. This fine was based on a recommendation by a unit of the Brazilian Ministry of Justice, whose investigation began in 2003, alleging violation of competition laws with respect to the sale of industrial and medical gases. The fines are based on a percentage of our total revenue in Brazil in 2003.

We have denied the allegations made by the authorities and filed an appeal in October 2010 with the Brazilian courts. On 6 May 2014, our appeal was granted and the fine against Air Products Brasil Ltda. was dismissed. CADE has appealed that ruling and the matter remains pending. We, with advice of our outside legal counsel, have assessed the status of this matter and have concluded that, although an adverse final judgment after exhausting all appeals is possible, such a judgment is not probable. As a result, no provision has been made in the consolidated financial statements. We estimate the maximum possible loss to be the full amount of the fine of R$179.2 million (approximately $47 at 30 June 2019) plus interest accrued thereon until final disposition of the proceedings.

Other than this matter, we do not currently believe there are any legal proceedings, individually or in the aggregate, that are reasonably possible to have a material impact on our financial condition, results of operations, or cash flows.

Environmental

In the normal course of business, we are involved in legal proceedings under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA: the federal Superfund law); Resource Conservation and Recovery Act (RCRA); and similar state and foreign environmental laws relating to the designation of certain sites for investigation or remediation. Presently, there are 32 sites on which a final settlement has not been reached where we, along with others, have been designated a potentially responsible party by the Environmental Protection Agency or are otherwise engaged in investigation or remediation, including cleanup activity at certain of our current and former manufacturing sites. We continually monitor these sites for which we have environmental exposure.

Accruals for environmental loss contingencies are recorded when it is probable that a liability has been incurred and the amount of loss can be reasonably estimated. The consolidated balance sheets at 30 June 2019 and 30 September 2018 included an accrual of $71.1 and $76.8, respectively, primarily as part of other noncurrent liabilities. The environmental liabilities will be paid over a period of up to 30 years. We estimate the exposure for environmental loss contingencies to range from $71 to a reasonably possible upper exposure of $84 as of 30 June 2019.

Actual costs to be incurred at identified sites in future periods may vary from the estimates, given inherent uncertainties in evaluating environmental exposures. Using reasonably possible alternative assumptions of the exposure level could result in an increase to the environmental accrual. Due to the inherent uncertainties related to environmental exposures, a significant increase to the reasonably possible upper exposure level could occur if a new site is designated, the scope of remediation is increased, a different remediation alternative is identified, or a significant increase in our proportionate share occurs. We do not expect that any sum we may have to pay in connection with environmental matters in excess of the amounts recorded or disclosed above would have a material adverse impact on our financial position or results of operations in any one year.

PACE

At 30 June 2019, $24.7 of the environmental accrual was related to the Pace facility.

In 2006, we sold our Amines business, which included operations at Pace, Florida, and recognized a liability for retained environmental obligations associated with remediation activities at Pace. We are required by the Florida Department of Environmental Protection (FDEP) and the United States Environmental Protection Agency (USEPA) to continue our remediation efforts. We estimated that it would take a substantial period of time to complete the groundwater remediation, and the costs through completion were estimated to range from $42 to $52. As no amount within the range was a better estimate than another, we recognized a before-tax expense of $42 in fiscal 2006 as a component of income from discontinued operations and recorded an environmental accrual of $42 in continuing operations on the consolidated balance sheets. There has been no change to the estimated exposure range related to the Pace facility.

We have implemented many of the remedial corrective measures at the Pace facility required under 1995 Consent Orders issued by the FDEP and the USEPA. Contaminated soils have been bioremediated, and the treated soils have been secured in a lined on-site disposal cell. Several groundwater recovery systems have been installed to contain and remove contamination from groundwater. We completed an extensive assessment of the site to determine how well existing measures are working, what additional corrective measures may be needed, and whether newer remediation technologies that were not available in the 1990s might be suitable to more quickly and effectively remove groundwater contaminants. Based on assessment results, we completed a focused feasibility study that has identified alternative approaches that may more effectively remove contaminants. We continue to review alternative remedial approaches with the FDEP and have started additional field work to support the design of an improved groundwater recovery network with the objective of targeting areas of higher contaminant concentration and avoiding areas of high groundwater iron which has proven to be a significant operability issue for the project. In the first quarter of 2015, we entered into a new Consent Order with the FDEP requiring us to continue our remediation efforts at the Pace facility. The costs we are incurring under the new Consent Order are consistent with our previous estimates.

PIEDMONT

At 30 June 2019, $14.9 of the environmental accrual was related to the Piedmont site.

On 30 June 2008, we sold our Elkton, Maryland, and Piedmont, South Carolina, production facilities and the related North American atmospheric emulsions and global pressure sensitive adhesives businesses. In connection with the sale, we recognized a liability for retained environmental obligations associated with remediation activities at the Piedmont site. This site is under active remediation for contamination caused by an insolvent prior owner.

We are required by the South Carolina Department of Health and Environmental Control (SCDHEC) to address both contaminated soil and groundwater. Numerous areas of soil contamination have been addressed, and contaminated groundwater is being recovered and treated. The SCDHEC issued its final approval to the site-wide feasibility study on 13 June 2017 and the Record of Decision for the site on 27 June 2018. Field work has started to support the remedial design, and in the fourth quarter of fiscal year 2018, we signed a Consent Agreement Amendment memorializing our obligations to complete the cleanup of the site. We estimate that source area remediation and groundwater recovery and treatment will continue through 2029. Thereafter, we expect this site to go into a state of monitored natural attenuation through 2047.

We recognized a before-tax expense of $24 in 2008 as a component of income from discontinued operations and recorded an environmental liability of $24 in continuing operations on the consolidated balance sheets. There have been no significant changes to the estimated exposure.

PASADENA

At 30 June 2019, $11.8 of the environmental accrual was related to the Pasadena site.

During the fourth quarter of 2012, management committed to permanently shutting down our polyurethane intermediates (PUI) production facility in Pasadena, Texas. In shutting down and dismantling the facility, we have undertaken certain obligations related to soil and groundwater contaminants. We have been pumping and treating groundwater to control off-site contaminant migration in compliance with regulatory requirements and under the approval of the Texas Commission on Environmental Quality (TCEQ). We estimate that the pump and treat system will continue to operate until 2042.

We plan to perform additional work to address other environmental obligations at the site. This additional work includes remediating, as required, impacted soils, investigating groundwater west of the former PUI facility, performing post closure care for two closed RCRA surface impoundment units, and establishing engineering controls. In 2012, we estimated the total exposure at this site to be $13. There have been no significant changes to the estimated exposure.

13. SHARE-BASED COMPENSATION

We have various share-based compensation programs, which include deferred stock units, stock options, and restricted stock. During the nine months ended 30 June 2019, we granted market-based and time-based deferred stock units. Under all programs, the terms of the awards are fixed at the grant date. We issue shares from treasury stock upon the payout of deferred stock units, the exercise of stock options, and the issuance of restricted stock awards. As of 30 June 2019, there were 4,473,615 shares available for future grant under our Long-Term Incentive Plan (LTIP), which is shareholder approved.

Share-based compensation cost recognized on the consolidated income statements is summarized below:

	Three Months Ended 30 June		Nine Months Ended 30 June	
	2019	2018	2019	2018
Before-tax share-based compensation cost	$9.8	$7.9	$31.0	$30.4
Income tax benefit	(2.3)	(1.9)	(7.3)	(7.2)
After-tax share-based compensation cost	$7.5	$6.0	$23.7	$23.2

Before-tax share-based compensation cost is primarily included in "Selling and administrative" on our consolidated income statements. The amount of share-based compensation cost capitalized in the first nine months of fiscal years 2019 and 2018 was not material.

Deferred Stock Units

During the nine months ended 30 June 2019, we granted 114,929 market-based deferred stock units. The market-based deferred stock units are earned at the end of the performance period beginning 1 October 2018 and ending 30 September 2021, conditioned on the level of the Company’s total shareholder return in relation to a defined peer group over the three-year performance period.

The market-based deferred stock units had an estimated grant-date fair value of $229.61 per unit, which was estimated using a Monte Carlo simulation model. The model utilizes multiple input variables that determine the probability of satisfying the market condition stipulated in the grant and calculates the fair value of the awards. We generally expense the grant-date fair value of these awards on a straight-line basis over the vesting period. The calculation of the fair value of market-based deferred stock units used the following assumptions:

Expected volatility	17.5%
Risk-free interest rate	2.8%
Expected dividend yield	2.6%

In addition, during the nine months ended 30 June 2019, we granted 166,119 time-based deferred stock units at a weighted average grant-date fair value of $167.82.

14. ACCUMULATED OTHER COMPREHENSIVE LOSS

The tables below summarize changes in accumulated other comprehensive loss (AOCL), net of tax, attributable to Air Products for the three and nine months ended 30 June 2019:

	Derivatives qualifying as hedges	Foreign currency translation adjustments	Pension and postretirement benefits	Total
Balance at 31 March 2019	($49.5)	($1,030.8)	($664.5)	($1,744.8)
Other comprehensive income (loss) before reclassifications	7.5	(48.8)	—	(41.3)
Amounts reclassified from AOCL	(13.1)	(2.6)	14.8	(.9)
Net current period other comprehensive income (loss)	(5.6)	(51.4)	14.8	(42.2)
Amount attributable to noncontrolling interests	.1	(5.7)	—	(5.6)
Balance at 30 June 2019	($55.2)	($1,076.5)	($649.7)	($1,781.4)

	Derivatives qualifying as hedges	Foreign currency translation adjustments	Pension and postretirement benefits	Total
Balance at 30 September 2018	($37.6)	($1,009.8)	($694.5)	($1,741.9)
Other comprehensive loss before reclassifications	(38.2)	(65.6)	(3.9)	(107.7)
Amounts reclassified from AOCL	20.7	(2.6)	48.7	66.8
Net current period other comprehensive income (loss)	(17.5)	(68.2)	44.8	(40.9)
Amount attributable to noncontrolling interests	.1	(1.5)	—	(1.4)
Balance at 30 June 2019	($55.2)	($1,076.5)	($649.7)	($1,781.4)

The table below summarizes the reclassifications out of AOCL and the affected line item on the consolidated income statements:

	Three Months Ended 30 June		Nine Months Ended 30 June	
	2019	2018	2019	2018
(Gain) Loss on Cash Flow Hedges, net of tax				
Sales/Cost of sales	$—	$1.9	$.4	$6.9
Other income/expense, net	(16.9)	(22.4)	8.9	(37.6)
Interest expense	3.8	2.8	11.4	6.3
Total (Gain) Loss on Cash Flow Hedges, net of tax	($13.1)	($17.7)	$20.7	($24.4)
Currency Translation Adjustment				
Cost of sales[(A)]	$—	$—	$—	$3.1
Gain on exchange of equity affiliate investments[(B)]	(2.6)	—	(2.6)	—
Total Currency Translation Adjustment	($2.6)	$—	($2.6)	$3.1
Pension and Postretirement Benefits, net of tax[(C)]	$14.8	$26.0	$48.7	$75.5

(A) The fiscal year 2018 impact relates to an equipment sale resulting from the termination of a contract in the Industrial Gases – Asia segment during the first quarter.

(B) The fiscal year 2019 impact relates to a net gain on the exchange of two equity affiliates with a joint venture partner. Refer to Note 6, Acquisitions, for additional information.

(C) The components of net periodic benefit cost reclassified out of AOCL include items such as prior service cost amortization, actuarial loss amortization, and settlements and are included in "Other non-operating income (expense), net" on the consolidated income statements. Refer to Note 11, Retirement Benefits, for additional information.

15. EARNINGS PER SHARE

The following table sets forth the computation of basic and diluted earnings per share (EPS):

	Three Months Ended 30 June		Nine Months Ended 30 June	
	2019	2018	2019	2018
Numerator				
Income from continuing operations	$488.0	$430.7	$1,256.8	$1,002.7
Income from discontinued operations	—	43.2	—	42.2
Net Income Attributable to Air Products	$488.0	$473.9	$1,256.8	$1,044.9
Denominator (in millions)				
Weighted average common shares — Basic	220.6	219.5	220.2	219.3
Effect of dilutive securities				
Employee stock option and other award plans	1.3	1.4	1.2	1.4
Weighted average common shares — Diluted	221.9	220.9	221.4	220.7
Basic EPS Attributable to Air Products				
Income from continuing operations	$2.21	$1.96	$5.71	$4.57
Income from discontinued operations	—	.20	—	.19
Net Income Attributable to Air Products	$2.21	$2.16	$5.71	$4.76
Diluted EPS Attributable to Air Products				
Income from continuing operations	$2.20	$1.95	$5.68	$4.54
Income from discontinued operations	—	.20	—	.19
Net Income Attributable to Air Products	$2.20	$2.15	$5.68	$4.73

For the three and nine months ended 30 June 2019, there were no antidilutive outstanding share-based awards. For the three months ended 30 June 2018, there were no antidilutive outstanding share-based awards. Outstanding share-based awards of .1 million were antidilutive and therefore excluded from the computation of diluted EPS for the nine months ended 30 June 2018.

16. INCOME TAXES

U.S. Tax Cuts and Jobs Act

The United States enacted the U.S. Tax Cuts and Jobs Act (the "Tax Act") on 22 December 2017. This legislation significantly changed existing U.S. tax laws, including a reduction in the federal corporate income tax rate from 35% to 21%, a deemed repatriation tax on unremitted foreign earnings, as well as other changes.

We filed our 2018 federal income tax return in June 2019, which required an adjustment to our initial calculation of the deemed repatriation tax. Our income tax provision for the three months ended 30 June 2019 includes a discrete net income tax expense of $3.2 resulting from this adjustment. Our income tax provision for the nine months ended 30 June 2019 includes a net expense of $43.8, which reflects the net expense recorded to refine our estimates in the first quarter of 2019, within the one-year measurement period. This net expense included the reversal of a $56.2 benefit recorded in the fourth quarter of fiscal year 2018 related to the U.S. taxation of deemed foreign dividends and a benefit of $12.4 to reduce the total expected costs of the deemed repatriation tax.

For the nine months ended 30 June 2018, our consolidated income statements reflect the impacts recorded during the first quarter of fiscal year 2018, which include a discrete net income tax expense of $206.5 for our initial provisional estimates of the impacts of the Tax Act and a reduction to equity affiliates' income of $32.5 for future costs of repatriation related to the Tax Act that will be borne by an equity affiliate.

While our accounting for the provisions of the Tax Act is not provisional, further adjustments to the deemed repatriation tax could result from future adjustments to state tax return filing positions, U.S. or foreign tax examinations of the years impacted by the calculation, or from the issuance of additional federal or state guidance.

2018 Tax Restructuring and Audit Settlement

In the second quarter of fiscal year 2018, we recognized a $38.8 tax benefit, net of reserves for uncertain tax positions, and a decrease in net deferred tax liabilities resulting from the restructuring of foreign subsidiaries.

In the third quarter of fiscal year 2018 we received a final audit settlement agreement that resulted in an income tax benefit of approximately $9.1, including interest, in continuing operations during the three months ended 30 June 2018 for the release of tax reserves.

Effective Tax Rate

Our effective tax rate was 17.9% and 21.3% for the three and nine months ended 30 June 2019, respectively. Our effective tax rate was 19.4% and 30.6% for the three and nine months ended 30 June 2018, respectively. The current and prior year effective tax rates were primarily impacted by the Tax Act, restructuring benefit, and audit settlement items discussed above.

Cash Paid for Taxes (Net of Cash Refunds)

On a total company basis, income tax payments, net of refunds, were $250.8 and $319.1 for the nine months ended 30 June 2019 and 2018, respectively.

17. SUPPLEMENTAL INFORMATION

Facility Closure

In December 2018, one of our customers was subject to a government enforced shutdown due to environmental reasons. As a result, we recognized a charge of $29.0 during the first quarter of fiscal year 2019 primarily related to the write-off of onsite assets. This charge is reflected as “Facility closure” on our consolidated income statements for the nine months ended 30 June 2019 and has been excluded from segment results. Annual sales and operating income associated with this customer prior to the facility closure were not material to the Industrial Gases – Asia segment. We do not expect to recognize additional charges related to this shutdown.

Related Party Sales

We have related party sales to some of our equity affiliates and joint venture partners. Sales to related parties totaled approximately $80 and $245 for the three and nine months ended 30 June 2019, respectively, and $70 and $245 for the three and nine months ended 30 June 2018, respectively. Agreements with related parties include terms that are consistent with those that we believe would have been negotiated at an arm’s length with an independent party.

18. BUSINESS SEGMENT INFORMATION

Our reporting segments reflect the manner in which our chief operating decision maker reviews results and allocates resources. Except in the Industrial Gases – EMEA and Corporate and other segments, each reporting segment meets the definition of an operating segment and does not include the aggregation of multiple operating segments. Our Industrial Gases – EMEA and Corporate and other segments each include the aggregation of two operating segments that meet the aggregation criteria under GAAP.

Our reporting segments are:

- Industrial Gases – Americas
- Industrial Gases – EMEA (Europe, Middle East, and Africa)
- Industrial Gases – Asia
- Industrial Gases – Global
- Corporate and other

	Industrial Gases – Americas	Industrial Gases – EMEA	Industrial Gases – Asia	Industrial Gases – Global	Corporate and other	Segment Total
Three Months Ended 30 June 2019						
Sales	$955.3	$494.6	$679.4	$57.9	$36.8	$2,224.0
Operating income (loss)	262.2	123.4	231.4	(9.6)	(41.3)	566.1
Depreciation and amortization	126.3	47.8	87.9	2.2	4.9	269.1
Equity affiliates' income	21.7	18.8	14.9	1.0	—	56.4
Three Months Ended 30 June 2018						
Sales	$948.7	$561.1	$623.8	$101.1	$24.3	$2,259.0
Operating income (loss)	237.1	118.8	185.5	19.8	(45.4)	515.8
Depreciation and amortization	120.5	49.8	69.5	2.3	3.5	245.6
Equity affiliates' income	24.1	17.5	15.1	1.4	—	58.1

	Industrial Gases – Americas	Industrial Gases – EMEA	Industrial Gases – Asia	Industrial Gases – Global	Corporate and other	Segment Total
Nine Months Ended 30 June 2019						
Sales	$2,936.2	$1,513.2	$1,931.6	$179.9	$74.8	$6,635.7
Operating income (loss)	737.0	351.5	632.9	(17.9)	(136.9)	1,566.6
Depreciation and amortization	376.8	140.4	252.7	6.3	13.0	789.2
Equity affiliates' income	62.1	45.8	44.9	2.7	—	155.5
Nine Months Ended 30 June 2018						
Sales	$2,771.7	$1,638.6	$1,825.0	$335.8	$60.2	$6,631.3
Operating income (loss)	676.6	340.0	509.7	41.4	(135.8)	1,431.9
Depreciation and amortization	360.6	149.6	188.9	5.8	8.6	713.5
Equity affiliates' income	59.6	41.7	44.7	2.1	—	148.1
Total Assets						
30 June 2019	$5,896.6	$3,399.7	$6,357.6	$284.3	$3,593.7	$19,531.9
30 September 2018	5,904.0	3,280.4	5,899.5	240.1	3,854.3	19,178.3

The sales information noted above relates to external customers only. All intersegment sales are eliminated in consolidation. These sales are generally transacted at market pricing.

We generally do not have intersegment sales from our regional industrial gases businesses. Equipment manufactured for our industrial gases segments is generally transferred at cost and not reflected as an intersegment sale.

Changes in estimates on projects accounted for under the cost incurred input method are recognized as a cumulative adjustment for the inception-to-date effect of such change. For the nine months ended 30 June 2019 and 2018, changes in estimates favorably impacted operating income by approximately $15 and $25, respectively.

Below is a reconciliation of segment total operating income to consolidated operating income:

	Three Months Ended 30 June		Nine Months Ended 30 June	
Operating Income	2019	2018	2019	2018
Segment total	$566.1	$515.8	$1,566.6	$1,431.9
Facility closure	—	—	(29.0)	—
Cost reduction actions	(25.5)	—	(25.5)	—
Gain on exchange of equity affiliate investments	29.1	—	29.1	—
Consolidated Total	$569.7	$515.8	$1,541.2	$1,431.9

Below is a reconciliation of segment total equity affiliates' income to consolidated equity affiliates' income:

	Three Months Ended 30 June		Nine Months Ended 30 June	
Equity Affiliates' Income	2019	2018	2019	2018
Segment total	$56.4	$58.1	$155.5	$148.1
Tax reform repatriation - equity method investment	—	—	—	(32.5)
Consolidated Total	$56.4	$58.1	$155.5	$115.6

Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations

The disclosures in this quarterly report are complementary to those made in our 2018 Form 10-K. An analysis of results for the third quarter and first nine months of fiscal year 2019 is provided in this Management's Discussion and Analysis.

The following discussion should be read in conjunction with the consolidated financial statements and the accompanying notes contained in this quarterly report. Unless otherwise indicated, financial information is presented on a continuing operations basis. All comparisons in the discussion are to the corresponding prior year, unless otherwise stated. All amounts presented are in accordance with U.S. generally accepted accounting principles (GAAP), except as noted. All amounts are presented in millions of dollars, except for per share data, unless otherwise indicated. Captions such as income from continuing operations attributable to Air Products, net income attributable to Air Products, and diluted earnings per share attributable to Air Products are simply referred to as "income from continuing operations," "net income," and "diluted earnings per share (EPS)" throughout this Management's Discussion and Analysis, unless otherwise stated.

The discussion of results that follows includes comparisons to certain non-GAAP ("adjusted") financial measures. The presentation of non-GAAP measures is intended to provide investors, potential investors, securities analysts, and others with useful supplemental information to evaluate the performance of the business because such measures, when viewed together with our financial results computed in accordance with GAAP, provide a more complete understanding of the factors and trends affecting our historical financial performance and projected future results. The reconciliations of reported GAAP results to non-GAAP measures are presented on pages 48-53. Descriptions of the excluded items appear on pages 37-38 and pages 43-44.

THIRD QUARTER 2019 VS. THIRD QUARTER 2018

THIRD QUARTER 2019 IN SUMMARY

- Sales of $2,224.0 decreased 2%, or $35.0, as positive underlying sales of 6% were more than offset by unfavorable currency impacts of 4%, a contract modification to a tolling arrangement in India of 3%, and lower energy and natural gas cost pass-through to customers of 1%.
- Operating income of $569.7 increased 10%, or $53.9, and operating margin of 25.6% increased 280 basis points (bp). On a non-GAAP basis, adjusted operating income of $566.1 increased 10%, or $50.3, and adjusted operating margin of 25.5% increased 270 bp.
- Income from continuing operations of $488.0 increased 13%, or $57.3. On a non-GAAP basis, adjusted income from continuing operations of $480.9 increased 12%, or $50.2.
- Adjusted EBITDA of $891.6 increased 9%, or $72.1. Adjusted EBITDA margin of 40.1% increased 380 bp.
- Diluted EPS of $2.20 increased 13%, or $.25. On a non-GAAP basis, adjusted diluted EPS of $2.17 increased 11%, or $.22. A summary table of changes in diluted EPS is presented on the following page.

Changes in Diluted EPS Attributable to Air Products

	Three Months Ended 30 June		Increase
	2019	2018	(Decrease)
Diluted EPS from Continuing Operations – GAAP	**$2.20**	**$1.95**	**$.25**
Operating Income Impact (after-tax)			
Underlying business			
Volume			($.04)
Price, net of variable costs			.30
Other costs			(.02)
Currency			(.05)
Cost reduction actions			(.08)
Gain on exchange of equity affiliate investments			.13
Total Operating Income Impact (after-tax)			**$.24**
Other Impact (after-tax)			
Equity affiliates' income			($.01)
Other non-operating income (expense), net			.02
Income tax			.02
Tax reform repatriation			(.02)
Noncontrolling interests			.01
Weighted average diluted shares			(.01)
Total Other Impact (after-tax)			**$.01**
Total Change in Diluted EPS from Continuing Operations – GAAP			**$.25**

	Three Months Ended 30 June		Increase
	2019	2018	(Decrease)
Diluted EPS from Continuing Operations – GAAP	**$2.20**	**$1.95**	**$.25**
Cost reduction and asset actions	.08	—	.08
Gain on exchange of equity affiliate investments	(.13)	—	(.13)
Tax reform repatriation	.02	—	.02
Diluted EPS from Continuing Operations – Non-GAAP Measure	**$2.17**	**$1.95**	**$.22**

THIRD QUARTER RESULTS OF OPERATIONS

Discussion of Consolidated Results

	Three Months Ended 30 June			
	2019	2018	$ Change	Change
Sales	$2,224.0	$2,259.0	($35.0)	(2)%
Operating income	569.7	515.8	53.9	10 %
Operating margin	25.6%	22.8%		280 bp
Equity affiliates' income	56.4	58.1	(1.7)	(3)%
Income from continuing operations	488.0	430.7	57.3	13 %
Non-GAAP Measures				
Adjusted EBITDA	$891.6	$819.5	$72.1	9 %
Adjusted EBITDA margin	40.1%	36.3%		380 bp
Adjusted operating income	566.1	515.8	50.3	10 %
Adjusted operating margin	25.5%	22.8%		270 bp

Sales	% Change from Prior Year
Underlying business	
Volume	2 %
Price	4 %
Energy and natural gas cost pass-through	(1)%
Currency	(4)%
Other	(3)%
Total Consolidated Sales Change	**(2)%**

Sales of $2,224.0 decreased 2%, or $35.0. Underlying sales were up 6% due to positive pricing of 4% and favorable volumes of 2%. The pricing improvement was attributable to our merchant businesses across the regional segments. Strong underlying volumes driven by new plants onstream were negatively impacted by lower sale of equipment activity on the Jazan project as the project nears completion and a prior year contract termination for an old flue-gas desulfurization plant. Excluding the lower Jazan sales, volumes would have increased 4% due to new plants, primarily the Lu'An project in Asia, base business growth, and acquisitions. Lower energy and natural gas cost pass-through to customers decreased sales by 1%, and unfavorable currency impacts, primarily driven by the Chinese Renminbi and Euro, decreased sales by 4%. Finally, the modification of an existing hydrogen supply contract to a tolling arrangement in India, reflected in the table above as "Other," decreased sales by 3%.

Operating Income and Margin

Operating income of $569.7 increased 10%, or $53.9, as positive pricing, net of power and fuel costs, of $81 and a gain on the exchange of two 50%-owned equity affiliates of $29 were partially offset by a charge for cost reduction actions of $26, negative currency impacts of $12, unfavorable volume mix of $11, and higher net operating costs of $7. Operating margin of 25.6% increased 280 bp, primarily due to positive pricing and the impact of the contract modification to a tolling arrangement in India, partially offset by unfavorable volume mix.

On a non-GAAP basis, adjusted operating income of $566.1 increased 10%, or $50.3, primarily due to positive pricing, net of power and fuel costs, partially offset by negative currency impacts, unfavorable volume mix, and higher net operating costs. Adjusted operating margin of 25.5% increased 270 bp, primarily due to positive pricing and the impact of the contract modification to a tolling arrangement in India, partially offset by unfavorable volume mix.

Adjusted EBITDA

We define Adjusted EBITDA as income from continuing operations (including noncontrolling interests) excluding certain non-GAAP adjustments, which the Company does not believe to be indicative of underlying business trends, before interest expense, other non-operating income (expense), net, income tax provision, and depreciation and amortization expense. Adjusted EBITDA provides a useful metric for management to assess operating performance.

Adjusted EBITDA of $891.6 increased 9%, or $72.1, primarily due to positive pricing, partially offset by unfavorable currency impacts. Adjusted EBITDA margin of 40.1% increased 380 bp, primarily due to higher pricing as well as the India contract modification.

Equity Affiliates' Income

Equity affiliates' income of $56.4 decreased 3%, or $1.7, primarily due to lower volumes, partially offset by sales associated with the Jazan Gas Projects Company joint venture.

Cost of Sales and Gross Margin

Cost of sales of $1,466.0 decreased 5%, or $79.4, due to positive currency impacts of $61, a favorable impact from the modification of a hydrogen supply contract to a tolling arrangement in India of $61, and lower energy and natural gas cost pass-through to customers of $20, partially offset by higher costs attributable to sales volumes of $49 and other costs of $14. Gross margin of 34.1% increased 250 bp, primarily due to positive pricing.

Selling and Administrative

Selling and administrative expense of $188.5 was flat as favorable currency impacts were offset by higher costs for incentive compensation. Selling and administrative expense as a percentage of sales increased from 8.3% to 8.5%.

Research and Development

Research and development expense of $18.1 increased 21%, or $3.1. Research and development expense as a percentage of sales increased from .7% to .8%.

Cost Reduction Actions

During the third quarter of fiscal year 2019, we recognized an expense of $25.5 ($18.8 after-tax, or $.08 per share) for severance and other benefits associated with position eliminations. Refer to Note 5, Cost Reduction Actions, to the consolidated financial statements for additional information. This expense has been reflected as "Cost reduction actions" on the consolidated income statements and was excluded from segment operating income for the three months ended 30 June 2019.

Gain on Exchange of Equity Affiliate Investments

During the third quarter of fiscal year 2019, we recognized a net gain of $29.1 ($.13 per share) resulting from the exchange of two 50%-owned industrial gas joint ventures in China. Refer to Note 6, Acquisitions, to the consolidated financial statements for additional information. The net gain has been reflected as "Gain on exchange of equity affiliate investments" on our consolidated income statements and was excluded from segment operating income for the three months ended 30 June 2019. There were no tax impacts on the exchange.

Other Income (Expense), Net

Other income (expense), net of $14.7 increased $8.9, primarily due to favorable currency impacts.

Interest Expense

	Three Months Ended 30 June	
	2019	2018
Interest incurred	$37.8	$42.4
Less: capitalized interest	3.6	7.5
Interest expense	$34.2	$34.9

Interest incurred decreased 11%, or $4.6, primarily due to favorable currency impacts and a lower average interest rate on the debt portfolio. The change in capitalized interest was attributable to a decrease in the carrying value of projects under construction, primarily driven by the Lu'An project in Asia.

Other Non-Operating Income (Expense), Net

Other non-operating income (expense), net of $17.6 increased 38%, or $4.8, primarily due to non-service pension benefits in the current year.

Effective Tax Rate

The effective tax rate equals the income tax provision divided by income from continuing operations before taxes. The effective tax rate was 17.9% and 19.4% in the third quarters of fiscal years 2019 and 2018, respectively. The current year rate was lower primarily due to a non-taxable gain of $29.1 resulting from the exchange of two equity affiliates with a joint venture partner in China, higher tax benefits from share-based compensation, and final determinations of U.S. and foreign income tax. The current year benefits were partially offset by a discrete net income tax expense of $3.2 ($.02 per share) resulting from an adjustment in June 2019 to our initial calculation of the deemed repatriation tax related to the U.S. Tax Cuts and Jobs Act as well as a foreign audit settlement agreement that resulted in an income tax benefit of approximately $9.1 in the prior year.

On a non-GAAP basis, the adjusted effective tax rate was 18.6% and 19.4% in the third quarters of fiscal years 2019 and 2018, respectively. The current year rate was lower due to higher tax benefits from share-based compensation and final determinations of U.S. and foreign income tax, partially offset by a foreign audit settlement agreement that resulted in an income tax benefit of approximately $9.1 in the prior year.

Refer to Note 16, Income Taxes, to the consolidated financial statements for additional information.

Segment Analysis

Industrial Gases – Americas

	Three Months Ended 30 June			
	2019	2018	$ Change	% Change
Sales	$955.3	$948.7	$6.6	1 %
Operating income	262.2	237.1	25.1	11 %
Operating margin	27.4%	25.0%		240 bp
Equity affiliates' income	21.7	24.1	(2.4)	(10)%
Adjusted EBITDA	410.2	381.7	28.5	7 %
Adjusted EBITDA margin	42.9%	40.2%		270 bp

Sales	% Change from Prior Year
Underlying business	
Volume	— %
Price	4 %
Energy and natural gas cost pass-through	(1)%
Currency	(2)%
Total Industrial Gases – Americas Sales Change	**1 %**

Sales of $955.3 increased 1%, or $6.6. Underlying sales were up 4% from higher pricing, primarily driven by our North America merchant business. Volumes were flat as base merchant business growth in North America was offset by a prior year contract termination for an old flue-gas desulfurization plant. Excluding this termination, volumes would have increased 1%. In South America, volumes and pricing improved slightly despite continued economic weakness in the region. Lower energy and natural gas cost pass-through to customers and unfavorable currency impacts decreased sales by 1% and 2%, respectively.

Operating income of $262.2 increased 11%, or $25.1, primarily due to higher pricing, net of power and fuel costs, of $31, partially offset by unfavorable volumes of $3. Operating margin of 27.4% increased 240 bp, primarily due to positive pricing.

Equity affiliates' income of $21.7 decreased 10%, or $2.4.

Industrial Gases – Europe, Middle East, and Africa (EMEA)

	Three Months Ended 30 June			
	2019	2018	$ Change	% Change
Sales	$494.6	$561.1	($66.5)	(12)%
Operating income	123.4	118.8	4.6	4%
Operating margin	24.9%	21.2%		370 bp
Equity affiliates' income	18.8	17.5	1.3	7%
Adjusted EBITDA	190.0	186.1	3.9	2%
Adjusted EBITDA margin	38.4%	33.2%		520 bp

Sales	% Change from Prior Year
Underlying business	
Volume	2 %
Price	4 %
Energy and natural gas cost pass-through	(2)%
Currency	(5)%
Other	(11)%
Total Industrial Gases – EMEA Sales Change	**(12)%**

Sales of $494.6 decreased 12%, or $66.5. Underlying sales were up 6% from higher pricing of 4% and favorable volumes of 2%. Pricing improved across all product lines throughout the region. Favorable volumes were mostly attributable to acquisition activity as our base business remained stable. Energy and natural gas cost pass-through to customers reduced sales by 2%. Unfavorable currency impacts, primarily from the Euro and British Pound Sterling, decreased sales by 5%, and the modification of an existing hydrogen supply contract to a tolling arrangement in India in December 2018, reflected in the table above as "Other," decreased sales by 11%.

Operating income of $123.4 increased 4%, or $4.6, primarily due to higher pricing, net of power and fuel costs, of $18, partially offset by unfavorable currency impacts of $7 and unfavorable volume mix of $5. Operating margin of 24.9% increased 370 bp primarily due to higher pricing and the impact of the contract modification to a tolling arrangement in India, partially offset by unfavorable volume mix.

Equity affiliates' income of $18.8 increased 7%, or $1.3, primarily due to sales associated with the Jazan Gas Projects Company joint venture, partially offset by unfavorable volumes.

Industrial Gases – Asia

	Three Months Ended 30 June			
	2019	2018	$ Change	% Change
Sales	$679.4	$623.8	$55.6	9%
Operating income	231.4	185.5	45.9	25%
Operating margin	34.1%	29.7%		440 bp
Equity affiliates' income	14.9	15.1	(.2)	(1)%
Adjusted EBITDA	334.2	270.1	64.1	24%
Adjusted EBITDA margin	49.2%	43.3%		590 bp

Sales	% Change from Prior Year
Underlying business	
Volume	10 %
Price	5 %
Energy and natural gas cost pass-through	— %
Currency	(6)%
Total Industrial Gases – Asia Sales Change	**9 %**

Sales of $679.4 increased 9%, or $55.6. Underlying sales increased 15% from higher volumes of 10% and higher pricing of 5%. The higher volumes were mostly attributable to new plants, primarily the full onstream of the Lu'An project. Pricing improved across all product lines throughout the region. Energy and natural gas cost pass-through to customers was flat, while unfavorable currency impacts, primarily from the Chinese Renminbi and South Korean Won, decreased sales by 6%.

Operating income of $231.4 increased 25%, or $45.9, due to favorable pricing, net of power and fuel costs, of $31, higher volumes of $20, and lower net operating costs of $6, partially offset by unfavorable currency impacts of $11. Operating margin of 34.1% increased 440 bp primarily due to higher pricing, lower net operating costs, and favorable volumes.

Equity affiliates' income of $14.9 decreased 1%, or $.2.

Industrial Gases – Global

The Industrial Gases – Global segment includes sales of cryogenic and gas processing equipment for air separation and centralized global costs associated with management of all the Industrial Gases segments.

	Three Months Ended 30 June			
	2019	2018	$ Change	% Change
Sales	$57.9	$101.1	($43.2)	(43)%
Operating income (loss)	(9.6)	19.8	(29.4)	(148)%
Adjusted EBITDA	(6.4)	23.5	(29.9)	(127)%

Sales of $57.9 decreased 43%, or $43.2, primarily due to lower sale of equipment activity on the multiple air separation units that will serve Saudi Aramco's Jazan oil refinery and power plant in Saudi Arabia. We expect to complete this project in 2019.

Operating loss of $9.6 decreased $29.4 from operating income of $19.8 in the prior year, primarily due to the lower sale of equipment activity.

Corporate and other

The Corporate and other segment includes our liquefied natural gas (LNG), turbo machinery equipment, and helium storage and distribution sale of equipment businesses and corporate support functions that benefit all segments. The results of the Corporate and other segment also include income and expense that is not directly associated with the other segments, such as foreign exchange gains and losses.

	Three Months Ended 30 June			
	2019	2018	$ Change	% Change
Sales	$36.8	$24.3	$12.5	51%
Operating loss	(41.3)	(45.4)	4.1	9%
Adjusted EBITDA	(36.4)	(41.9)	5.5	13%

Sales of $36.8 increased 51%, or $12.5, primarily due to sales generated from turbo machinery equipment and higher LNG activity. Operating loss of $41.3 decreased 9%, or $4.1.

FIRST NINE MONTHS 2019 VS. FIRST NINE MONTHS 2018

FIRST NINE MONTHS 2019 IN SUMMARY

- Sales of $6,635.7 were flat as positive underlying sales of 4% and higher energy and natural gas cost pass-through to customers of 1% were offset by unfavorable currency impacts of 3% and the impact of a contract modification to a tolling arrangement in India of 2%.
- Operating income of $1,541.2 increased 8%, or $109.3, and operating margin of 23.2% increased 160 bp. On a non-GAAP basis, adjusted operating income of $1,566.6 increased 9%, or $134.7, and adjusted operating margin of 23.6% increased 200 bp.
- Income from continuing operations of $1,256.8 increased 25%, or $254.1. On a non-GAAP basis, adjusted income from continuing operations of $1,316.2 increased 9%, or $113.3.
- Adjusted EBITDA of $2,511.3 increased 9%, or $217.8. Adjusted EBITDA margin of 37.8% increased 320 bp.
- Diluted EPS of $5.68 increased 25%, or $1.14. On a non-GAAP basis, adjusted diluted EPS of $5.94 increased 9%, or $.49. A summary table of changes in diluted earnings per share is presented below.
- We increased our quarterly dividend by 5% from $1.10 to $1.16 per share, or $4.64 per share annually. This is the 37th consecutive year that we have increased our dividend payment, reflecting continued confidence in our financial strength, significant cash flows, and growth outlook.

Changes in Diluted EPS Attributable to Air Products

	Nine Months Ended 30 June 2019	Nine Months Ended 30 June 2018	Increase (Decrease)
Diluted EPS from Continuing Operations – GAAP	**$5.68**	**$4.54**	**$1.14**
Operating Income Impact (after-tax)			
Underlying business			
Volume			$.25
Price, net of variable costs			.56
Other costs			(.15)
Currency			(.17)
Facility closure			(.10)
Cost reduction actions			(.08)
Gain on exchange of equity affiliate investments			.13
Total Operating Income Impact (after-tax)			**$.44**
Other Impact (after-tax)			
Equity affiliates' income			.03
Other non-operating income (expense), net			.06
Interest expense			(.04)
Income tax			(.02)
Tax reform repatriation			2.12
Tax reform adjustment related to deemed foreign dividends			(.25)
Tax reform rate change and other			(.97)
Tax restructuring			(.18)
Noncontrolling interests			(.03)
Weighted average diluted shares			(.02)
Total Other Impact (after-tax)			**$.70**
Total Change in Diluted EPS from Continuing Operations – GAAP			**$1.14**

	Nine Months Ended 30 June 2019	Nine Months Ended 30 June 2018	Increase (Decrease)
Diluted EPS from Continuing Operations – GAAP	**$5.68**	**$4.54**	**$1.14**
Facility closure	.10	—	.10
Cost reduction actions	.08	—	.08
Gain on exchange of equity affiliate investments	(.13)	—	(.13)
Pension settlement loss	.02	—	.02
Tax reform repatriation	(.06)	2.06	(2.12)
Tax reform adjustment related to deemed foreign dividends	.25	—	.25
Tax reform rate change and other	—	(.97)	.97
Tax restructuring	—	(.18)	.18
Diluted EPS from Continuing Operations – Non-GAAP Measure	**$5.94**	**$5.45**	**$.49**

FIRST NINE MONTHS RESULTS OF OPERATIONS

Discussion of Consolidated Results

	Nine Months Ended 30 June 2019	Nine Months Ended 30 June 2018	$ Change	Change
Sales	$6,635.7	$6,631.3	$4.4	—%
Operating income	1,541.2	1,431.9	109.3	8%
Operating margin	23.2%	21.6%		160 bp
Equity affiliates’ income	155.5	115.6	39.9	35%
Income from continuing operations	1,256.8	1,002.7	254.1	25%
Non-GAAP Measures				
Adjusted EBITDA	2,511.3	2,293.5	217.8	9%
Adjusted EBITDA margin	37.8%	34.6%		320 bp
Adjusted operating income	1,566.6	1,431.9	134.7	9%
Adjusted operating margin	23.6%	21.6%		200 bp
Adjusted equity affiliates' income	155.5	148.1	7.4	5%

Sales	% Change from Prior Year
Underlying business	
Volume	1 %
Price	3 %
Energy and natural gas cost pass-through	1 %
Currency	(3)%
Other	(2)%
Total Consolidated Sales Change	**— %**

Sales of $6,635.7 were flat as positive underlying sales of 4% and higher energy and natural gas cost pass-through to customers of 1% were offset by unfavorable currency impacts of 3% and the impact of the India contract modification of 2%. Underlying sales were up on favorable pricing of 3% and higher volumes of 1%. The pricing improvement was largely attributable to our merchant business across the regional segments. Higher volumes from new project onstreams, mainly the Lu'An project in Asia, and positive base business growth were offset by lower sale of equipment activity on the Jazan project as the project nears completion and a prior year equipment sale resulting from a contract termination in Asia. Unfavorable currency impacts were driven by the Chinese Renminbi and Euro.

Operating Income and Margin

Operating income of $1,541.2 increased 8%, or $109.3, as positive pricing, net of power and fuel costs, of $154, favorable volumes of $67, and a gain on the exchange of two 50%-owned equity affiliates of $29 were partially offset by unfavorable currency impacts of $46, higher net operating costs of $40, a charge for a facility closure of $29, and a charge for cost reduction actions of $26. Operating margin of 23.2% increased 160 bp, primarily due to positive pricing and favorable volume mix, partially offset by unfavorable net operating costs.

On a non-GAAP basis, adjusted operating income of $1,566.6 increased 9%, or $134.7, primarily due to positive pricing, net of power and fuel costs, and favorable volumes, partially offset by unfavorable currency impacts and higher net operating costs. Adjusted operating margin of 23.6% increased 200 bp, primarily due to positive pricing and favorable volume mix, partially offset by unfavorable net operating costs.

Adjusted EBITDA

Adjusted EBITDA of $2,511.3 increased 9%, or $217.8, primarily due to positive pricing and favorable volumes, partially offset by unfavorable currency impacts. Adjusted EBITDA margin of 37.8% increased 320 bp, primarily due to positive pricing and favorable volume mix.

Equity Affiliates' Income

Equity affiliates' income of $155.5 increased 35%, or $39.9, primarily due to an expense of $32.5 in the prior year resulting from the U.S. Tax Cuts and Jobs Act. Refer to Note 16, Income Taxes, to the consolidated financial statements for additional information. On a non-GAAP basis, adjusted equity affiliates' income of $155.5 increased 5%, or $7.4, primarily driven by favorable volumes and new plant contributions.

Cost of Sales and Gross Margin

Cost of sales, including the facility closure discussed below, of $4,513.7 decreased 2%, or $110.0, as positive currency impacts of $154, a favorable impact from the modification of a hydrogen supply contract to a tolling arrangement in India of $126, and lower costs attributable to sales volumes of $21 were partially offset by higher energy and natural gas cost pass-through to customers of $109, higher other costs of $53, and the facility closure of $29. Gross margin of 32.0% increased 170 bp, primarily due to positive pricing and favorable volume mix, partially offset by the facility closure. Excluding the facility closure, adjusted cost of sales of $4,484.7 decreased 3%, or $139.0, and gross margin of 32.4% increased 210 bp, primarily due to positive pricing and favorable volume mix, partially offset by higher other costs.

Facility Closure

In December 2018, one of our customers was subject to a government enforced shutdown due to environmental reasons. As a result, we recognized a charge of $29.0 ($22.1 after-tax, or $.10 per share) during the first quarter of fiscal year 2019 primarily related to the write-off of onsite assets. This charge is reflected as “Facility closure” on our consolidated income statements for the nine months ended 30 June 2019 and has been excluded from segment results. Annual sales and operating income associated with this customer prior to the facility closure were not material to the Industrial Gases – Asia segment. We do not expect to recognize additional charges related to this shutdown.

Selling and Administrative Expense

Selling and administrative expense of $568.1 decreased 1%, or $6.7. Selling and administrative expense, as a percentage of sales, decreased from 8.7% to 8.6%.

Research and Development

Research and development expense of $50.0 increased 13%, or $5.9. Research and development expense as a percentage of sales increased from .7% to .8%.

Cost Reduction Actions

During the third quarter of fiscal year 2019, we recognized an expense of $25.5 ($18.8 after-tax, or $.08 per share) for severance and other benefits associated with position eliminations. Refer to Note 5, Cost Reduction Actions, to the consolidated financial statements for additional information. This expense has been reflected as "Cost reduction actions" on the consolidated income statements and was excluded from segment operating income for the nine months ended 30 June 2019.

Gain on Exchange of Equity Affiliate Investments

During the third quarter of fiscal year 2019, we recognized a net gain of $29.1 ($.13 per share) resulting from the exchange of two 50%-owned industrial gas joint ventures in China. Refer to Note 6, Acquisitions, to the consolidated financial statements for additional information. The net gain has been reflected as "Gain on exchange of equity affiliate investments" on our consolidated income statements and was excluded from segment operating income for the nine months ended 30 June 2019. There were no tax impacts on the exchange.

Other Income (Expense), Net

Other income (expense), net of $33.7 decreased 22%, or $9.5, primarily due to lower income from transition services agreements.

Interest Expense

	Nine Months Ended 30 June	
	2019	2018
Interest incurred	$116.3	$109.4
Less: capitalized interest	9.4	14.3
Interest expense	$106.9	$95.1

Interest incurred increased 6%, or $6.9, as interest expense associated with financing the Lu'An joint venture was partially offset by favorable impacts from currency, a lower average interest rate on the debt portfolio, and a lower average debt balance. The change in capitalized interest was attributable to a decrease in the carrying value of projects under construction, primarily driven by the Lu'An project in Asia.

Other Non-Operating Income (Expense), net

Other non-operating income (expense), net of $49.8 increased 48%, or $16.1, primarily due to higher interest income on cash and cash items. Non-service pension benefits in the current year were partially offset by a second quarter pension settlement loss of $5.0 ($3.8 after-tax, or $.02 per share) associated with the U.S. Supplementary Pension Plan.

Effective Tax Rate

The effective tax rate was 21.3% and 30.6% for the nine months ended 30 June 2019 and 2018, respectively. The current year rate was lower primarily due to the impacts related to the enactment of the U.S. Tax Cuts and Jobs Act (the "Tax Act") in fiscal year 2018. This legislation significantly changed existing U.S. tax laws, including a reduction in the federal corporate income tax rate from 35% to 21%, a deemed repatriation tax on unremitted foreign earnings, as well as other changes. As a result of the Tax Act, our income tax provision reflects discrete net income tax expense of $43.8 and $206.5 in fiscal years 2019 and 2018, respectively. The current year net expense includes the reversal of a $56.2 ($.25 per share) benefit related to the U.S. taxation of deemed foreign dividends that was included in our fiscal year 2018 income tax provision. We reversed this benefit based on our intent to follow proposed regulations issued during the first quarter of 2019. The current year expense was partially offset by a $12.4 ($.06 per share) reduction to the total expected costs of the deemed repatriation tax for foreign tax redeterminations and other foreign tax adjustments resulting from the completion of our estimates of the impact of the Tax Act in 2019. The higher 2018 expense resulting from the Tax Act was partially offset by a $38.8 tax benefit from the restructuring of foreign subsidiaries as well as a $9.1 benefit from a foreign audit settlement agreement. The current year rate was also impacted by a non-taxable gain of $29.1 resulting from the exchange of two equity affiliates with a joint venture partner in China during the third quarter of fiscal year 2019 as well as higher benefits related to final determinations of U.S and foreign tax. Refer to Note 16, Income Taxes, to the consolidated financial statements for additional information.

On a non-GAAP basis, the adjusted effective tax rate increased from 18.9% in fiscal year 2018 to 19.2% in fiscal year 2019, primarily due to the prior year benefit of $9.1 from a foreign audit settlement agreement, partially offset by higher current year benefits related to final determinations of U.S and foreign tax.

Segment Analysis

Industrial Gases – Americas

	Nine Months Ended 30 June			
	2019	2018	$ Change	% Change
Sales	$2,936.2	$2,771.7	$164.5	6%
Operating income	737.0	676.6	60.4	9%
Operating margin	25.1%	24.4%		70 bp
Equity affiliates' income	62.1	59.6	2.5	4%
Adjusted EBITDA	1,175.9	1,096.8	79.1	7%
Adjusted EBITDA margin	40.0%	39.6%		40 bp

Sales	% Change from Prior Year
Underlying business	
Volume	2 %
Price	3 %
Energy and natural gas cost pass-through	3 %
Currency	(2)%
Total Industrial Gases – Americas Sales Change	**6 %**

Sales of $2,936.2 increased 6%, or $164.5. Underlying sales were up 5% from higher pricing of 3% and higher volumes of 2%. The pricing improvement was primarily driven by our merchant business. The volume increase was primarily attributable to new plant onstreams, higher hydrogen demand, and North America base merchant business growth. Higher energy and natural gas cost pass-through to customers increased sales by 3%, while unfavorable currency impacts reduced sales by 2%.

Operating income of $737.0 increased 9%, or $60.4, as higher pricing, net of power and fuel costs, of $58 and favorable volumes of $40 were partially offset by higher costs of $33 and unfavorable currency impacts of $5. The higher costs were primarily driven by higher planned maintenance and transportation costs. Operating margin of 25.1% increased 70 bp as positive pricing and higher volumes were mostly offset by unfavorable costs and higher energy and natural gas cost pass-through to customers.

Equity affiliates' income of $62.1 increased 4%, or $2.5, primarily due to new plant contributions and volume growth in Mexico.

Industrial Gases – EMEA

	Nine Months Ended 30 June			
	2019	2018	$ Change	% Change
Sales	$1,513.2	$1,638.6	($125.4)	(8)%
Operating income	351.5	340.0	11.5	3 %
Operating margin	23.2%	20.7%		250 bp
Equity affiliates' income	45.8	41.7	4.1	10 %
Adjusted EBITDA	537.7	531.3	6.4	1 %
Adjusted EBITDA margin	35.5%	32.4%		310 bp

Sales	% Change from Prior Year
Underlying business	
Volume	1 %
Price	3 %
Energy and natural gas cost pass-through	2 %
Currency	(6)%
Other	(8)%
Total Industrial Gases – EMEA Sales Change	**(8)%**

Sales of $1,513.2 decreased 8%, or $125.4. Underlying sales were up 4% from higher pricing of 3% and higher volumes of 1%. The pricing improvement was primarily driven by our merchant business. Energy and natural gas cost pass-through to customers increased sales by 2%. Unfavorable currency impacts, primarily from the Euro and British Pound Sterling, reduced sales by 6%, and the modification of an existing hydrogen supply contract to a tolling arrangement in India in December 2018, reflected in the table above as "Other," reduced sales by 8%.

Operating income of $351.5 increased 3%, or $11.5, primarily due to higher pricing, net of power and fuel costs, of $37, partially offset by unfavorable currency impacts of $19 and higher costs of $5. Operating margin of 23.2% increased 250 bp as favorable pricing and the impact of the India tolling arrangement were partially offset by higher costs.

Equity affiliates’ income of $45.8 increased 10%, or $4.1, primarily due to sales associated with the Jazan Gas Projects Company joint venture.

Industrial Gases – Asia

	Nine Months Ended 30 June			
	2019	2018	$ Change	% Change
Sales	$1,931.6	$1,825.0	$106.6	6%
Operating income	632.9	509.7	123.2	24%
Operating margin	32.8%	27.9%		490 bp
Equity affiliates’ income	44.9	44.7	.2	—%
Adjusted EBITDA	930.5	743.3	187.2	25%
Adjusted EBITDA margin	48.2%	40.7%		750 bp

Sales	% Change from Prior Year
Underlying business	
Volume	6 %
Price	4 %
Energy and natural gas cost pass-through	1 %
Currency	(5)%
Total Industrial Gases – Asia Sales Change	**6 %**

Sales of $1,931.6 increased 6%, or $106.6. Underlying sales were up 10% from higher volumes of 6% and higher pricing of 4%. The volume increase was primarily driven by new plants onstream, mainly the Lu'An project, and base business growth, partially offset by the impact from short-term sale of equipment activity in the prior year. Pricing improved across Asia, primarily driven by our merchant business. Energy and natural gas cost pass-through to customers increased sales by 1%, while unfavorable currency impacts, primarily from the Chinese Renminbi, reduced sales by 5%.

Operating income of $632.9 increased 24%, or $123.2, due to higher volumes of $81, favorable pricing, net of power and fuel costs, of $57, and lower net operating costs of $9, partially offset by unfavorable currency impacts of $24. Operating margin of 32.8% increased 490 bp primarily due to higher volumes and positive pricing.

Equity affiliates’ income of $44.9 was flat versus the prior year.

Industrial Gases – Global

	Nine Months Ended 30 June			
	2019	2018	$ Change	% Change
Sales	$179.9	$335.8	($155.9)	(46)%
Operating income (loss)	(17.9)	41.4	(59.3)	(143)%
Adjusted EBITDA	(8.9)	49.3	(58.2)	(118)%

Sales of $179.9 decreased 46%, or $155.9. The decrease in sales was primarily driven by lower sale of equipment activity on the multiple air separation units that will serve Saudi Aramco's Jazan oil refinery and power plant in Saudi Arabia. We expect to complete this project in 2019.

Operating loss of $17.9 decreased $59.3 from operating income of $41.4 in the prior year, primarily due to the lower sale of equipment activity.

Corporate and other

	Nine Months Ended 30 June			
	2019	2018	$ Change	% Change
Sales	$74.8	$60.2	$14.6	24 %
Operating loss	(136.9)	(135.8)	(1.1)	(1)%
Adjusted EBITDA	(123.9)	(127.2)	3.3	3 %

Sales of $74.8 increased 24%, or $14.6, primarily due to sales generated from turbo machinery equipment. Operating loss of $136.9 increased 1%, or $1.1.

RECONCILIATION OF NON-GAAP FINANCIAL MEASURES
(Millions of dollars unless otherwise indicated, except for per share data)

The Company has presented certain financial measures on a non-GAAP ("adjusted") basis and has provided a reconciliation to the most directly comparable financial measure calculated in accordance with GAAP. The Company's non-GAAP measures are not meant to be considered in isolation or as a substitute for the most directly comparable measure calculated in accordance with GAAP. The Company believes these non-GAAP measures provide investors, potential investors, securities analysts, and others with useful information to evaluate the performance of the business because such measures, when viewed together with financial results computed in accordance with GAAP, provide a more complete understanding of the factors and trends affecting the Company's historical financial performance and projected future results.

In many cases, non-GAAP measures are determined by adjusting the most directly comparable GAAP measure to exclude certain disclosed items, or "non-GAAP adjustments", that the Company believes are not representative of underlying business performance. For example, the Company previously excluded certain expenses associated with cost reduction actions, impairment charges, and gains on disclosed transactions. The reader should be aware that the Company may recognize similar losses or gains in the future. Readers should also consider the limitations associated with these non-GAAP measures, including the potential lack of comparability of these measures from one company to another.

The tax impact on our pre-tax non-GAAP adjustments reflects the expected current and deferred income tax impact of the transactions. These tax impacts are primarily driven by the statutory tax rate of the various relevant jurisdictions and the taxability of the adjustments in those jurisdictions.

Reconciliations of reported GAAP results to the non-GAAP measures for the third quarter and first nine months of fiscal years 2019 and 2018 are presented below:

CONSOLIDATED RESULTS

	Continuing Operations					
	Three Months Ended 30 June					
Q3 2019 vs. Q3 2018	**Operating Income**	**Operating Margin(A)**	**Equity Affiliates' Income**	**Income Tax Provision**	**Net Income**	**Diluted EPS**
2019 GAAP	$569.7	25.6 %	$56.4	$109.3	$488.0	$2.20
2018 GAAP	515.8	22.8 %	58.1	107.1	430.7	1.95
Change GAAP	$53.9	280bp	($1.7)	$2.2	$57.3	$.25
% Change GAAP	10%		(3)%	2%	13%	13%
2019 GAAP	$569.7	25.6 %	$56.4	$109.3	$488.0	$2.20
Cost reduction actions	25.5	1.2 %	—	6.7	18.8	.08
Gain on exchange of equity affiliate investments	(29.1)	(1.3)%	—	—	(29.1)	(.13)
Tax reform repatriation	—	— %	—	(3.2)	3.2	.02
2019 Non-GAAP Measure	$566.1	25.5 %	$56.4	$112.8	$480.9	$2.17
2018 GAAP	$515.8	22.8 %	$58.1	$107.1	$430.7	$1.95
2018 Non-GAAP Measure	$515.8	22.8 %	$58.1	$107.1	$430.7	$1.95
Change Non-GAAP Measure	$50.3	270bp	($1.7)	$5.7	$50.2	$.22
% Change Non-GAAP Measure	10%		(3)%	5%	12%	11%

Table of Contents

2019 vs. 2018	Continuing Operations Nine Months Ended 30 June Operating Income	Operating Margin(A)	Equity Affiliates' Income	Income Tax Provision	Net Income	Diluted EPS
2019 GAAP	$1,541.2	23.2 %	$155.5	$348.9	$1,256.8	$5.68
2018 GAAP	1,431.9	21.6 %	115.6	455.1	1,002.7	4.54
Change GAAP	$109.3	160bp	$39.9	($106.2)	$254.1	$1.14
% Change GAAP	8%		35%	(23)%	25%	25%
2019 GAAP	$1,541.2	23.2 %	$155.5	$348.9	$1,256.8	$5.68
Facility closure	29.0	.4 %	—	6.9	22.1	.10
Cost reduction actions	25.5	.4 %	—	6.7	18.8	.08
Gain on exchange of equity affiliate investments	(29.1)	(.4)%	—	—	(29.1)	(.13)
Pension settlement loss(B)	—	— %	—	1.2	3.8	.02
Tax reform repatriation	—	— %	—	12.4	(12.4)	(.06)
Tax reform adjustment related to deemed foreign dividends	—	— %	—	(56.2)	56.2	.25
2019 Non-GAAP Measure	$1,566.6	23.6 %	$155.5	$319.9	$1,316.2	$5.94
2018 GAAP	$1,431.9	21.6 %	$115.6	$455.1	$1,002.7	$4.54
Tax reform repatriation	—	— %	32.5	(420.5)	453.0	2.06
Tax reform rate change and other	—	— %	—	214.0	(214.0)	(.97)
Tax restructuring	—	— %	—	38.8	(38.8)	(.18)
2018 Non-GAAP Measure	$1,431.9	21.6 %	$148.1	$287.4	$1,202.9	$5.45
Change Non-GAAP Measure	$134.7	200bp	$7.4	$32.5	$113.3	$.49
% Change Non-GAAP Measure	9%		5%	11 %	9%	9%

(A) Operating margin is calculated by dividing operating income by sales.

(B) Reflected on the consolidated income statements within "Other non-operating income (expense), net." Fiscal year 2019 includes a before-tax impact of $5.0 for the nine months ended 30 June 2019. Refer to Note 11, Retirement Benefits, to the consolidated financial statements for additional information.

Below is a reconciliation of consolidated operating income to segment total operating income:

Operating Income	Three Months Ended 30 June 2019	2018	Nine Months Ended 30 June 2019	2018
Consolidated total	$569.7	$515.8	$1,541.2	$1,431.9
Facility closure	—	—	29.0	—
Cost reduction actions	25.5	—	25.5	—
Gain on exchange of equity affiliate investments	(29.1)	—	(29.1)	—
Segment total	$566.1	$515.8	$1,566.6	$1,431.9

Below is a reconciliation of consolidated equity affiliates' income to segment total equity affiliates' income:

Equity Affiliates' Income	Three Months Ended 30 June 2019	2018	Nine Months Ended 30 June 2019	2018
Consolidated total	$56.4	$58.1	$155.5	$115.6
Tax reform repatriation - equity method investment	—	—	—	32.5
Segment total	$56.4	$58.1	$155.5	$148.1

ADJUSTED EBITDA

We define Adjusted EBITDA as income from continuing operations (including noncontrolling interests) excluding certain non-GAAP adjustments, which the Company does not believe to be indicative of underlying business trends, before interest expense, other non-operating income (expense), net, income tax provision, and depreciation and amortization expense. Adjusted EBITDA provides a useful metric for management to assess operating performance.

Below is a reconciliation of income from continuing operations on a GAAP basis to adjusted EBITDA:

	Three Months Ended 30 June		Nine Months Ended 30 June	
	2019	2018	2019	2018
Income From Continuing Operations[(A)]	$500.2	$444.7	$1,290.7	$1,031.0
Add: Interest expense	34.2	34.9	106.9	95.1
Less: Other non-operating income (expense), net	17.6	12.8	49.8	33.7
Add: Income tax provision	109.3	107.1	348.9	455.1
Add: Depreciation and amortization	269.1	245.6	789.2	713.5
Add: Facility closure	—	—	29.0	—
Add: Cost reduction actions	25.5	—	25.5	—
Less: Gain on exchange of equity affiliate investments	29.1	—	29.1	—
Add: Tax reform repatriation - equity method investment	—	—	—	32.5
Adjusted EBITDA	$891.6	$819.5	$2,511.3	$2,293.5
Adjusted EBITDA margin	40.1%	36.3%	37.8%	34.6%
Change GAAP				
Income from continuing operations change	$55.5		$259.7	
Income from continuing operations % change	12%		25%	
Change Non-GAAP				
Adjusted EBITDA change	$72.1		$217.8	
Adjusted EBITDA % change	9%		9%	
Adjusted EBITDA margin change	380 bp		320 bp	

(A) Includes net income attributable to noncontrolling interests.

Below is a reconciliation of segment operating income to adjusted EBITDA:

	Industrial Gases– Americas	Industrial Gases– EMEA	Industrial Gases– Asia	Industrial Gases– Global	Corporate and other	Segment Total
GAAP MEASURE						
Three Months Ended 30 June 2019						
Operating income (loss)	$262.2	$123.4	$231.4	($9.6)	($41.3)	$566.1
Operating margin	27.4%	24.9%	34.1%			25.5%
Three Months Ended 30 June 2018						
Operating income (loss)	$237.1	$118.8	$185.5	$19.8	($45.4)	$515.8
Operating margin	25.0%	21.2%	29.7%			22.8%
Operating income (loss) change	$25.1	$4.6	$45.9	($29.4)	$4.1	$50.3
Operating income (loss) % change	11%	4%	25%	(148)%	9%	10%
Operating margin change	240 bp	370 bp	440 bp			270 bp
NON-GAAP MEASURE						
Three Months Ended 30 June 2019						
Operating income (loss)	$262.2	$123.4	$231.4	($9.6)	($41.3)	$566.1
Add: Depreciation and amortization	126.3	47.8	87.9	2.2	4.9	269.1
Add: Equity affiliates' income	21.7	18.8	14.9	1.0	—	56.4
Adjusted EBITDA	$410.2	$190.0	$334.2	($6.4)	($36.4)	$891.6
Adjusted EBITDA margin	42.9%	38.4%	49.2%			40.1%
Three Months Ended 30 June 2018						
Operating income (loss)	$237.1	$118.8	$185.5	$19.8	($45.4)	$515.8
Add: Depreciation and amortization	120.5	49.8	69.5	2.3	3.5	245.6
Add: Equity affiliates' income	24.1	17.5	15.1	1.4	—	58.1
Adjusted EBITDA	$381.7	$186.1	$270.1	$23.5	($41.9)	$819.5
Adjusted EBITDA margin	40.2%	33.2%	43.3%			36.3%
Adjusted EBITDA change	$28.5	$3.9	$64.1	($29.9)	$5.5	$72.1
Adjusted EBITDA % change	7%	2%	24%	(127)%	13%	9%
Adjusted EBITDA margin change	270 bp	520 bp	590 bp			380 bp

	Industrial Gases–Americas	Industrial Gases–EMEA	Industrial Gases–Asia	Industrial Gases–Global	Corporate and other	Segment Total
GAAP MEASURE						
Nine Months Ended 30 June 2019						
Operating income (loss)	$737.0	$351.5	$632.9	($17.9)	($136.9)	$1,566.6
Operating margin	25.1%	23.2%	32.8%			23.6%
Nine Months Ended 30 June 2018						
Operating income (loss)	$676.6	$340.0	$509.7	$41.4	($135.8)	$1,431.9
Operating margin	24.4%	20.7%	27.9%			21.6%
Operating income (loss) change	$60.4	$11.5	$123.2	($59.3)	($1.1)	$134.7
Operating income (loss) % change	9%	3%	24%	(143)%	(1)%	9%
Operating margin change	70 bp	250 bp	490 bp			200 bp
NON-GAAP MEASURE						
Nine Months Ended 30 June 2019						
Operating income (loss)	$737.0	$351.5	$632.9	($17.9)	($136.9)	$1,566.6
Add: Depreciation and amortization	376.8	140.4	252.7	6.3	13.0	789.2
Add: Equity affiliates' income	62.1	45.8	44.9	2.7	—	155.5
Adjusted EBITDA	$1,175.9	$537.7	$930.5	($8.9)	($123.9)	$2,511.3
Adjusted EBITDA margin	40.0%	35.5%	48.2%			37.8%
Nine Months Ended 30 June 2018						
Operating income (loss)	$676.6	$340.0	$509.7	$41.4	($135.8)	$1,431.9
Add: Depreciation and amortization	360.6	149.6	188.9	5.8	8.6	713.5
Add: Equity affiliates' income	59.6	41.7	44.7	2.1	—	148.1
Adjusted EBITDA	$1,096.8	$531.3	$743.3	$49.3	($127.2)	$2,293.5
Adjusted EBITDA margin	39.6%	32.4%	40.7%			34.6%
Adjusted EBITDA change	$79.1	$6.4	$187.2	($58.2)	$3.3	$217.8
Adjusted EBITDA % change	7%	1%	25%	(118)%	3 %	9%
Adjusted EBITDA margin change	40 bp	310 bp	750 bp			320 bp

INCOME TAXES

The tax impact of our pre-tax non-GAAP adjustments reflects the expected current and deferred income tax expense associated with each adjustment and is primarily dependent upon the statutory tax rate of the various relevant jurisdictions and the taxability of the adjustments in those jurisdictions. For additional discussion on the impacts of our non-GAAP tax adjustments, including those resulting from the U.S. Tax Cuts and Jobs Act, refer to Note 16, Income Taxes, to the consolidated financial statements.

	Effective Tax Rate			
	Three Months Ended 30 June		Nine Months Ended 30 June	
	2019	2018	2019	2018
Income Tax Provision—GAAP	**$109.3**	**$107.1**	**$348.9**	**$455.1**
Income From Continuing Operations Before Taxes—GAAP	**$609.5**	**$551.8**	**$1,639.6**	**$1,486.1**
Effective Tax Rate—GAAP	**17.9%**	**19.4%**	**21.3%**	**30.6%**
Income Tax Provision—GAAP	$109.3	$107.1	$348.9	$455.1
Facility closure	—	—	6.9	—
Cost reduction actions	6.7	—	6.7	—
Pension settlement loss	—	—	1.2	—
Tax reform repatriation	(3.2)	—	12.4	(420.5)
Tax reform adjustment related to deemed foreign dividends	—	—	(56.2)	—
Tax reform rate change and other	—	—	—	214.0
Tax restructuring	—	—	—	38.8
Income Tax Provision—Non-GAAP Measure	**$112.8**	**$107.1**	**$319.9**	**$287.4**
Income From Continuing Operations Before Taxes—GAAP	$609.5	$551.8	$1,639.6	$1,486.1
Facility closure	—	—	29.0	—
Cost reduction actions	25.5	—	25.5	—
Gain on exchange of equity affiliate investments	(29.1)	—	(29.1)	—
Pension settlement loss	—	—	5.0	—
Tax reform repatriation - equity method investment	—	—	—	32.5
Income From Continuing Operations Before Taxes—Non-GAAP Measure	**$605.9**	**$551.8**	**$1,670.0**	**$1,518.6**
Effective Tax Rate—Non-GAAP Measure	**18.6%**	**19.4%**	**19.2%**	**18.9%**

LIQUIDITY AND CAPITAL RESOURCES

We have consistent access to commercial paper markets, and our cash balance and cash flows from operations and financing activities are expected to meet liquidity needs for the foreseeable future.

As of 30 June 2019, we had $1,091.4 of foreign cash and cash items compared to total cash and cash items of $2,696.8. As a result of the Tax Act, we currently do not expect that a significant portion of the earnings of our foreign subsidiaries and affiliates will be subject to U.S. income tax upon subsequent repatriation to the U.S. Depending on the country in which the subsidiaries and affiliates reside, the repatriation of these earnings may be subject to foreign withholding and other taxes. However, since we have significant current investment plans outside the U.S., it is our intent to permanently reinvest the majority of our foreign cash and cash items that would be subject to additional taxes outside the U.S.

Our cash flows from operating, investing, and financing activities, as reflected on the consolidated statements of cash flows, are summarized in the following table:

	Nine Months Ended 30 June	
Cash provided by (used for)	2019	2018
Operating activities	**$2,003.4**	$1,856.2
Investing activities	**(1,435.5)**	(1,031.8)
Financing activities	**(660.8)**	(1,097.8)

Operating Activities

For the first nine months of fiscal year 2019, cash provided by operating activities was $2,003.4. Income from continuing operations of $1,256.8 was adjusted for items including depreciation and amortization, deferred income taxes, impacts from the Tax Act, a facility closure, undistributed earnings of unconsolidated affiliates, gains on sale of assets and investments, share-based compensation, and noncurrent capital lease receivables. Adjustments to our estimates of the impacts of the Tax Act are included within "Tax reform repatriation" and "Deferred income taxes." See Note 16, Income Taxes, to the consolidated financial statements for additional information. The "Gain on sale of assets and investments" includes a gain on the disposition of our interest in High-Tech Gases. Refer to Note 6, Acquisitions, to the consolidated financial statements for additional information. The working capital accounts were a use of cash of $186.4, primarily driven by $139.5 from trade receivables and $94.8 from payables and accrued liabilities. The use of cash within "Payables and accrued liabilities" was primarily driven by a $42.2 decrease in accrued utilities and a $33.5 decrease in accrued incentive compensation due to payments on the 2018 plan. The decrease in accrued utilities was primarily driven by a contract modification to a tolling arrangement in India and lower utility cost in the Industrial Gases – Americas segment.

For the first nine months of 2018, cash provided by operating activities was $1,856.2 which included income from continuing operations of $1,002.7. The tax reform repatriation adjustment of $310.3 represents our obligation for the deemed repatriation tax resulting from the Tax Act and is payable over a period of eight years. Undistributed earnings of unconsolidated affiliates includes $32.5 of expense resulting from the Tax Act. See Note 16, Income Taxes, to the consolidated financial statements for additional information. The working capital accounts were a use of cash of $124.3, primarily driven by $164.9 from payables and accrued liabilities. The use of cash within payables and accrued liabilities includes a decrease in customer advances of $87.5 primarily related to sale of equipment activity, a decrease of $24.8 for severance payments, and a $23.2 decrease in accrued incentive compensation due to payments on the 2017 plan.

Cash paid for income taxes, net of cash refunds, was $250.8 and $311.6 for the nine months ended 30 June 2019 and 2018, respectively.

Investing Activities

For the first nine months of fiscal year 2019, cash used for investing activities was $1,435.5. Capital expenditures for plant and equipment were $1,507.6 and included a $111.7 asset purchase of two air separation units in conjunction with the signing of a 20-year sale of gas contract with the customer. Cash paid for acquisitions, less cash acquired of $107.0 primarily related to our acquisition of ACP Europe SA ("ACP"). See Note 6, Acquisitions, to the consolidated financial statements for further details regarding our acquisitions. Proceeds from investments of $190.5 resulted from maturities of time deposits with original terms greater than three months but less than one year.

For the first nine months of 2018, cash used for investing activities was $1,031.8. Capital expenditures for plant and equipment were $1,158.1. Cash paid for acquisitions, net of cash acquired, was $320.2. See Note 6, Acquisitions, to the consolidated financial statements for further details. Net proceeds from the maturities of short-term investments was a source of cash of $395.4.

We define capital expenditures as cash flows for additions to plant and equipment, acquisitions (less cash acquired), and investment in and advances to unconsolidated affiliates. The components of our capital expenditures are detailed in the table below:

	Nine Months Ended 30 June	
	2019	2018
Additions to plant and equipment	$1,507.6	$1,158.1
Acquisitions, less cash acquired	107.0	320.2
Investment in and advances to unconsolidated affiliates	15.7	—
Capital expenditures	$1,630.3	$1,478.3

We expect capital expenditures of approximately $2,400 to $2,500 in fiscal year 2019. This range includes our investment in our joint venture, Air Products Lu An (Changzhi) Co., Ltd., with Lu'An Clean Energy Company, which closed on 26 April 2018.

Sales backlog represents our estimate of revenue to be recognized in the future on sale of equipment orders and related process technologies that are under firm contracts. The sales backlog for the Company at 30 June 2019 was $624, compared to $204 at 30 September 2018.

Financing Activities

For the first nine months of fiscal year 2019, cash used for financing activities was $660.8 and primarily included dividend payments to shareholders of $738.4, partially offset by proceeds from stock option exercises of $63.3.

For the first nine months of 2018, cash used for financing activities was $1,097.8. This consisted primarily of dividend payments to shareholders of $656.6 and repayment on long-term debt of $418.2. Payments on long-term debt primarily related to the repayment of a 1.2% U.S. Senior Note of $400.0 that matured on 16 October 2017.

Financing and Capital Structure

Capital needs were satisfied primarily with cash from operations. Total debt as of 30 June 2019 and 30 September 2018, expressed as a percentage of total capitalization (total debt plus total equity), was 24.6% and 25.4%, respectively. Total debt increased from $3,812.6 at 30 September 2018 to $3,819.7 at 30 June 2019. The current year total debt balance includes $384.5 of related party debt associated with the Lu'An joint venture.

We have a $2,300.0 revolving credit agreement with a syndicate of banks ("the Credit Agreement") maturing 31 March 2022. Under the Credit Agreement, senior unsecured debt is available to both the Company and certain of its subsidiaries. The Credit Agreement provides a source of liquidity for the Company and supports its commercial paper program. The Company's only financial covenant is a maximum ratio of total debt to total capitalization no greater than 70%. No borrowings were outstanding under the Credit Agreement as of 30 June 2019 or 30 September 2018.

Commitments totaling $2.3 are maintained by our foreign subsidiaries, all of which was borrowed and outstanding as of 30 June 2019.

As of 30 June 2019, we were in compliance with all of the financial and other covenants under our debt agreements.

On 15 September 2011, the Board of Directors authorized the repurchase of up to $1,000 of our outstanding common stock. During the first nine months of fiscal year 2019, we did not purchase any of our outstanding shares. At 30 June 2019, $485.3 in share repurchase authorization remained.

Dividends

On 18 July 2019, the Board of Directors declared the fourth quarter dividend of $1.16 per share. The dividend is payable on 11 November 2019 to shareholders of record at the close of business on 1 October 2019.

CONTRACTUAL OBLIGATIONS

We are obligated to make future payments under various contracts, such as debt agreements, lease agreements, unconditional purchase obligations, and other long-term obligations. There have been no material changes to our contractual obligations since 30 September 2018.

PENSION BENEFITS

For the nine months ended 30 June 2019 and 2018, net periodic pension cost was $22.1 and $37.5, respectively. We recognized service-related costs of $31.3 and $39.5, respectively, on our consolidated income statements within operating income. The non-service benefits of $9.2 and $2.0 were included in "Other non-operating income (expense), net" for the nine months ended 30 June 2019 and 2018, respectively. The decrease in pension expense in fiscal year 2019 resulted from lower loss amortization, primarily due to favorable asset experience, and the impact of higher discount rates, partially offset by lower expected return on assets. The amount of service costs capitalized in fiscal years 2019 and 2018 was not material.

For the nine months ended 30 June 2019 and 2018, we recognized pension settlement losses of $6.3 and $4.8, respectively, to accelerate recognition of a portion of actuarial gains and losses deferred in accumulated other comprehensive loss. These losses are included within "Other non-operating income (expense), net" on our consolidated income statements. Pension settlement losses in fiscal years 2019 and 2018 were primarily associated with the U.S. Supplementary Pension Plan. We expect total pension settlement losses of approximately $10 in fiscal year 2019.

Management considers various factors when making pension funding decisions, including tax, cash flow, and regulatory implications. For the nine months ended 30 June 2019 and 2018, our cash contributions to funded pension plans and benefit payments for unfunded pension plans were $31.0 and $43.0, respectively. Total contributions for fiscal 2019 are expected to be approximately $45 to $65. During fiscal year 2018, total contributions were $68.3.

Refer to Note 11, Retirement Benefits, to the consolidated financial statements for details on pension cost and cash contributions.

COMMITMENTS AND CONTINGENCIES

Refer to Note 12, Commitments and Contingencies, to the consolidated financial statements for information concerning our commitments and contingencies, including litigation and environmental matters.

OFF-BALANCE SHEET ARRANGEMENTS

There have been no material changes to off-balance sheet arrangements since 30 September 2018. We are not a primary beneficiary in any material variable interest entity. Our off-balance sheet arrangements are not reasonably likely to have a material impact on financial condition, changes in financial condition, results of operations, or liquidity.

RELATED PARTY TRANSACTIONS

We have related party sales to some of our equity affiliates and joint venture partners. Sales to related parties totaled approximately $80 and $245 for the three and nine months ended 30 June 2019, respectively, and $70 and $245 for the three and nine months ended 30 June 2018, respectively. Agreements with related parties include terms that are consistent with those that we believe would have been negotiated at an arm's length with an independent party.

During fiscal year 2018, we completed the formation of Air Products Lu An (Changzhi) Co., Ltd. ("the JV"), a 60%-owned joint venture with Lu'An Clean Energy Company ("Lu'An"), and the JV acquired gasification and syngas clean-up assets from Lu'An. In connection with the acquisition, Lu'An made a loan to the JV of 2.6 billion RMB and we established a liability of 2.3 billion RMB for cash payments expected to be made to or on behalf of Lu'An in 2019. Long-term debt payable to Lu'An of approximately $322 and $384 as of 30 June 2019 and 30 September 2018, respectively, is presented on the consolidated balance sheets as "Long-term debt – related party." As of 30 June 2019, approximately $63 of the loan is reflected within "Current portion of long-term debt." The expected remaining cash payments are presented within "Payables and accrued liabilities" and were approximately $81 and $330 as of 30 June 2019 and 30 September 2018, respectively.

CRITICAL ACCOUNTING POLICIES AND ESTIMATES

Management's Discussion and Analysis of our financial condition and results of operations is based on the consolidated financial statements and accompanying notes that have been prepared in accordance with GAAP. The preparation of these financial statements 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.

Judgments and estimates of uncertainties are required in applying our accounting policies in many areas. However, application of policies that management has identified as critical places significant importance on management's judgment, often as the result of the need to make estimates of matters that are inherently uncertain. If actual results were to differ materially from these estimates, the reported results could be materially affected. A description of our major accounting policies, including those identified as critical, is included in our 2018 Form 10-K.

There have been no changes to our accounting policies or estimates during the first nine months of fiscal year 2019 that had a significant impact on our financial condition, change in financial condition, liquidity, or results of operations.

NEW ACCOUNTING GUIDANCE

See Note 2, New Accounting Guidance, and Note 3, Revenue Recognition, to the consolidated financial statements for information concerning the implementation and impact of new accounting guidance.

Item 3. Quantitative and Qualitative Disclosures About Market Risk

Information on our utilization of financial instruments and an analysis of the sensitivity of these instruments to selected changes in market rates and prices is included in our 2018 Form 10-K.

Our net financial instrument position increased from a liability of $3,736.2 at 30 September 2018 to a liability of $3,759.7 at 30 June 2019.

Interest Rate Risk

The sensitivity analysis related to the interest rate risk on the fixed portion of our debt portfolio assumes an instantaneous 100 bp move in interest rates from the level at 30 June 2019, with all other variables held constant. A 100 bp increase in market interest rates would result in a decrease of $82 and $96 in the net liability position of financial instruments at 30 June 2019 and 30 September 2018, respectively. A 100 bp decrease in market interest rates would result in an increase of $87 and $101 in the net liability position of financial instruments at 30 June 2019 and 30 September 2018.

There were no material changes to the sensitivity analysis related to the variable portion of our debt portfolio since 30 September 2018.

Foreign Currency Exchange Rate Risk

The sensitivity analysis related to foreign currency exchange rates assumes an instantaneous 10% change in the foreign currency exchange rates from their levels at 30 June 2019, with all other variables held constant. A 10% strengthening or weakening of the functional currency of an entity versus all other currencies would result in a decrease or increase, respectively, of $321 and $329 in the net liability position of financial instruments at 30 June 2019 and 30 September 2018, respectively.

Item 4. Controls and Procedures

Disclosure Controls and Procedures

We maintain a comprehensive set of disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act). Under the supervision of the Chief Executive Officer and Chief Financial Officer, the Company’s management conducted an evaluation of the effectiveness of the Company’s disclosure controls and procedures as of 30 June 2019. Based on that evaluation, the Chief Executive Officer and Chief Financial Officer concluded that, as of 30 June 2019, the disclosure controls and procedures were effective.

Internal Control Over Financial Reporting

There was no change in the Company's internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) during the quarter ended 30 June 2019 that has materially affected, or is reasonably likely to materially affect, the Company's internal control over financial reporting.

PART II. OTHER INFORMATION

Item 5. Other Information

Not applicable.

Item 6. Exhibits.

(a) Exhibits required by Item 601 of Regulation S-K

Exhibit No.	Description
31.1	Certification by the Principal Executive Officer pursuant to Rule 13a-14(a) or Rule 15d-14(a) of the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2	Certification by the Principal Financial Officer pursuant to Rule 13a-14(a) or Rule 15d-14(a) of the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1	Certification by the Principal Executive Officer and Principal Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002. †
101.INS	XBRL Instance Document. The XBRL Instance Document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.
101.SCH	XBRL Taxonomy Extension Schema
101.CAL	XBRL Taxonomy Extension Calculation Linkbase
101.LAB	XBRL Taxonomy Extension Label Linkbase
101.PRE	XBRL Taxonomy Extension Presentation Linkbase
101.DEF	XBRL Taxonomy Extension Definition Linkbase

† The certification attached as Exhibit 32 that accompanies this Quarterly Report on Form 10-Q, is not deemed filed with the Securities and Exchange Commission and is not to be incorporated by reference into any filing of Air Products and Chemicals, Inc. under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended, whether made before or after the date of this Form 10-Q, irrespective of any general incorporation language contained in such filing.

SIGNATURE

Pursuant to the requirements 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.

Air Products and Chemicals, Inc.

(Registrant)

Date: 25 July 2019

By: /s/ M. Scott Crocco

M. Scott Crocco

Executive Vice President and Chief Financial Officer

Exhibit 31.1

PRINCIPAL EXECUTIVE OFFICER'S CERTIFICATION

I, Seifi Ghasemi, certify that:

1. I have reviewed this Quarterly Report of Air Products and Chemicals, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

(a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

(b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

(c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

(d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

(a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

(b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: 25 July 2019

/s/ Seifi Ghasemi

Seifi Ghasemi

Chairman, President and Chief Executive Officer

Exhibit 31.2

PRINCIPAL FINANCIAL OFFICER'S CERTIFICATION

I, M. Scott Crocco, certify that:

1. I have reviewed this Quarterly Report of Air Products and Chemicals, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

(a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

(b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

(c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

(d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

(a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

(b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: 25 July 2019

/s/ M. Scott Crocco

M. Scott Crocco

Executive Vice President and Chief Financial Officer

Exhibit 32.1

CERTIFICATION PURSUANT TO 18 U.S.C. SECTION 1350,
AS ADOPTED PURSUANT TO SECTION 906 OF THE
SARBANES-OXLEY ACT OF 2002

In connection with the Quarterly Report of Air Products and Chemicals, Inc. (the “Company”) on Form 10-Q for the period ending 30 June 2019, as filed with the Securities and Exchange Commission on the date hereof (the “Report”), we, Seifi Ghasemi, Chairman, President, and Chief Executive Officer of the Company, and M. Scott Crocco, Executive Vice President and Chief Financial Officer of the Company, certify, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

1. The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

2. The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: 25 July 2019

/s/ Seifi Ghasemi

Seifi Ghasemi
Chairman, President, and Chief Executive Officer

/s/ M. Scott Crocco

M. Scott Crocco
Executive Vice President and Chief Financial Officer