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

FORM 10-K

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**
For the fiscal year ended 30 September 2023

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.)

1940 Air Products Boulevard
Allentown, Pennsylvania 18106-5500
(Address of principal executive offices) (Zip Code)

610-481-4911
(Registrant's telephone number, including area code)

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
1.000% Euro Notes due 2025	APD25	New York Stock Exchange
0.500% Euro Notes due 2028	APD28	New York Stock Exchange
0.800% Euro Notes due 2032	APD32	New York Stock Exchange
4.000% Euro Notes due 2035	APD35	New York Stock Exchange

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

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act.	Yes ☒	No ☐
Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act.	Yes ☐	No ☒
Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.	Yes ☒	No ☐
Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files).	Yes ☒	No ☐

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

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

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.	☐
Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C.7262(b)) by the registered public accounting firm that prepared or issued its audit report.	☒
If securities are registered pursuant to Section 12(b) of the Act, indicate by check mark whether the financial statements of the registrant included in the filing reflect the correction of an error to previously issued financial statements.	☐
Indicate by check mark whether any of those error corrections are restatements that required a recovery analysis of incentive-based compensation received by any of the registrant's executive officers during the relevant recovery period pursuant to §240.10D-1(b).	☐

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

The aggregate market value of the voting stock held by non-affiliates of the registrant on 31 March 2023 was approximately $63.6 billion. For purposes of the foregoing calculations, all directors and/or executive officers have been deemed to be affiliates, but the registrant disclaims that any such director and/or executive officer is an affiliate.

The number of shares of common stock issued and outstanding as of 31 October 2023 was 222,207,726.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's definitive Proxy Statement for the Annual Meeting of Shareholders to be held on 25 January 2024 are incorporated by reference into Part III.

AIR PRODUCTS AND CHEMICALS, INC. and Subsidiaries
ANNUAL REPORT ON FORM 10-K
For the fiscal year ended 30 September 2023

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FORWARD-LOOKING STATEMENTS

This Annual Report on Form 10-K 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,” "future," “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 capital expenditures and 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, inflation, and supply and demand dynamics in the market segments we serve, including demand for technologies and projects to limit the impact of global climate change;
- changes in the financial markets that may affect the availability and terms on which we may obtain financing;
- the ability to implement price increases to offset cost increases;
- disruptions to our supply chain and related distribution delays and cost increases;
- 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, scope changes, cost escalations, contract terminations, customer cancellations, or postponement of projects and sales;
- our ability to safely develop, operate, and manage costs of large-scale and technically complex projects;
- the future financial and operating performance of major customers, joint ventures, and equity affiliates;
- our ability to develop, implement, and operate new technologies and to market products produced utilizing new technologies;
- our ability to execute the projects in our backlog and refresh our pipeline of new projects;
- tariffs, economic sanctions and regulatory activities in jurisdictions in which we and our affiliates and joint ventures operate;
- the impact of environmental, tax, safety, or other legislation, as well as regulations and other public policy initiatives affecting our business and the business of our affiliates and related compliance requirements, including legislation, regulations, or policies intended to address global climate change;
- changes in tax rates and other changes in tax law;
- safety incidents relating to our operations;
- 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 or those of our business partners or service providers;
- catastrophic events, such as natural disasters and extreme weather events, pandemics and other public health crises, acts of war, including Russia's invasion of Ukraine and new and ongoing conflicts in the Middle East, or terrorism;
- the impact on our business and customers of price fluctuations in oil and natural gas and disruptions in markets and the economy due to oil and natural gas price volatility;

FORWARD-LOOKING STATEMENTS (CONTINUED)

- costs and outcomes of legal or regulatory proceedings and investigations;
- asset impairments due to economic conditions or specific events;
- significant fluctuations in inflation, interest rates and foreign currency exchange rates from those currently anticipated;
- damage to facilities, pipelines or delivery systems, including those we are constructing or that we own or operate for third parties;
- availability and cost of electric power, natural gas, and other 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 *1A, Risk Factors,* Item 7, *Management's Discussion and Analysis of Financial Condition and Results of Operations*, and Item 7A, *Quantitative and Qualitative Disclosures About Market Risk.* 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

Item 1. Business

As used in this report, unless the context indicates otherwise, the terms “we,” “our,” “us,” the “Company,” "Air Products," or “registrant” include controlled subsidiaries and affiliates of Air Products.

About Air Products

Air Products and Chemicals, Inc., a Delaware corporation originally founded in 1940, is a world-leading industrial gases company that has built a reputation for its innovative culture, operational excellence, and commitment to safety and the environment. Focused on serving energy, environmental, and emerging markets, we offer a portfolio of products and services that enables customers to improve their environmental performance, product quality, and productivity.

Air Products has a sustainability-driven two-pillar growth strategy consisting of the expansion and efficient operation of our core industrial gases business and the execution of projects that provide world-scale clean hydrogen. Our industrial gases business provides essential gases, related equipment, and applications expertise to customers in dozens of industries, including refining, chemicals, metals, electronics, manufacturing, medical, and food. We also develop, engineer, build, own, and operate some of the world’s largest clean hydrogen projects that will support the transition to low- and zero-carbon energy in the heavy-duty transportation and industrial sectors. Additionally, we are the world leader in the supply of liquefied natural gas ("LNG") process technology and equipment and provide turbomachinery, membrane systems, and cryogenic containers globally.

We manage our operations, assess performance, and report earnings under five reportable segments: Americas; Asia; Europe; Middle East and India; and Corporate and other. The discussion that follows is based on these operations. Refer to Note 25, *Business Segment and Geographic Information*, to the consolidated financial statements for additional information.

Our Businesses

<u>Industrial Gases Business</u>

Our industrial gases business, which is organized and operated regionally in the Americas, Asia, Europe, and Middle East and India segments, produces and sells atmospheric gases such as oxygen, nitrogen, and argon; process gases such as hydrogen, helium, carbon dioxide (CO_2), carbon monoxide, and syngas (a mixture of hydrogen and carbon monoxide); and specialty gases. Overall regional industrial gases sales constituted over 90% of consolidated sales in fiscal years 2023, 2022, and 2021, approximately half of which were attributable to atmospheric gases.

Each of the regional industrial gases segments competes against three global industrial gas companies: Air Liquide S.A., Linde plc, and Messer Group GmbH, as well as regional competitors. Competition in industrial gases is based primarily on price, reliability of supply, and the development of industrial gas applications. We derive a competitive advantage in locations where we have pipeline networks, which enable us to provide a reliable and economic supply of products to our larger customers.

Production

Industrial gases are generally produced at or near the point of use given the complexity and inefficiency of storing molecules at low temperatures. The industrial gases business develops, builds, and operates equipment for the production or processing of gases. Atmospheric gases are produced through various air separation processes, of which cryogenic distillation is the most prevalent, while process gases are produced by methods other than air separation. To produce hydrogen, we purify byproduct sources obtained from the chemical and petrochemical industries. We have historically produced hydrogen from hydrocarbons exclusively without carbon capture (known as "gray hydrogen"); however, we are also investing in projects that are intended to create a reliable and consistent world-scale source of low-carbon hydrogen produced from hydrocarbons with carbon capture (known as “blue hydrogen”) as well as carbon-free hydrogen produced from renewable energy (known as “green hydrogen”).

Electricity is the largest cost component in the production of atmospheric gases. To produce hydrogen, carbon monoxide, and syngas, steam methane reformers use natural gas as the primary raw material, while gasifiers use liquid and solid hydrocarbons as the primary raw material. We mitigate electricity, natural gas, and hydrocarbon price fluctuations contractually through pricing formulas, surcharges, cost pass-through provisions, and tolling arrangements. During fiscal year 2023, no significant difficulties were encountered in obtaining adequate supplies of power and natural gas.

Helium is produced as a byproduct of gases extracted from underground reservoirs, primarily natural gas as well as CO_2 purified before resale. Because helium is generally sourced globally at long distances from point of sale, we maintain an inventory of helium in our fleet of ISO containers as well as at the U.S. Bureau of Land Management underground storage facility in Amarillo, Texas, and our storage cavern near Beaumont, Texas. We obtain helium from several sources globally, including crude helium for purification from the U.S. Bureau of Land Management's helium reserve.

Supply Modes

We distribute gases to our industrial 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, principally in the energy production and refining, chemical, metals, and electronics industries worldwide, that require large volumes of gases and have relatively constant demand. Gases are produced and supplied by large facilities we construct or acquire on or near the customers' facilities or by pipeline systems from centrally located production facilities. These sale of gas contracts are generally governed by 15- to 20-year contracts. We also deliver 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 typically based on external indices. Our on-site supply mode generates approximately half our total company sales.
- *Merchant Gases*—Supply mode for liquid bulk and packaged gas products. Liquid bulk product is delivered in bulk in either liquid or gaseous form by tanker or tube trailer and stored, usually in its liquid state, in equipment that we typically design and install at the customer's site for vaporizing into a gaseous state as needed. Liquid bulk sales are usually governed by three- to five-year contracts. Packaged gas products are delivered in small quantities in either cylinders or dewars. We operate packaged gas businesses in Europe, Asia, and Latin America.

We maintain inventory in locations that facilitate supply of products to customers on a reasonable delivery schedule. Inventory consists primarily of crude helium, specialty gases, and other industrial gases supplied via the merchant gases supply mode.

End Use

The refining industry uses hydrogen to facilitate the conversion of heavy crude feedstock and lower the sulfur content of gasoline and diesel fuels. This produces cleaner transportation fuels that can be used with other equipment, particularly in the developing hydrogen-for-mobility markets, to significantly reduce emissions that contribute to climate change. Many other industries that already benefit from hydrogen's unique properties to improve quality, optimize performance, and reduce costs are also looking to hydrogen as a fuel that can help decarbonize their manufacturing processes. We have hydrogen fueling stations that support commercial markets as well as demonstration projects across the globe.

The chemicals industry uses hydrogen, oxygen, nitrogen, carbon monoxide, and syngas as feedstocks in the production of many basic chemicals. The energy production industry uses nitrogen injection for enhanced recovery of oil and natural gas and oxygen for gasification. Oxygen is used in combustion and industrial heating applications, including in the steel, certain nonferrous metals, glass, and cement industries. Nitrogen applications are used in food processing for freezing and preserving flavor, and nitrogen is used for inerting in various fields, including the metals, chemical, and semiconductor industries. Helium is used in laboratories and healthcare for cooling and in other industries for pressurizing, purging, and lifting. Argon is used in the metals and other industries for its unique inerting, thermal conductivity, and other properties. Industrial gases are also used in welding and providing healthcare and are utilized in various manufacturing processes to make them more efficient and to optimize performance.

Industrial Gases Equipment

We design and manufacture equipment for air separation, hydrocarbon recovery and purification, natural gas liquefaction, and liquid helium and liquid hydrogen transport and storage. The Corporate and other segment includes activity related to the sale of cryogenic and gas processing equipment for air separation. The equipment is sold worldwide to customers in a variety of industries, including chemical and petrochemical manufacturing, oil and gas recovery and processing, and steel and primary metals processing. The Corporate and other segment also includes the results of our LNG equipment business, our Gardner Cryogenics business, which fabricates helium and hydrogen transport and storage containers, and our Rotoflow business, which manufactures turboexpanders and other precision rotating equipment. Steel, aluminum, and capital equipment subcomponents such as compressors are the principal raw materials in the manufacturing of equipment. Raw materials for individual projects typically are acquired under firm purchase agreements. Equipment is produced at our manufacturing sites with certain components procured from subcontractors and vendors. Competition in the equipment business is based primarily on plant efficiency, service, technical know-how, and price, as well as schedule and plant performance guarantees. Our sale of equipment supply mode constituted less than 10% of consolidated sales in fiscal years 2023, 2022, and 2021.

Customers

We do not have a homogeneous customer base or end market, and no single customer accounts for more than 10% of our consolidated sales. We do have concentrations of customers in specific industries, primarily refining, chemicals, and electronics. Within each of these industries, we have several large-volume customers with long-term contracts. A negative trend affecting one of these industries, or the loss of one of these major customers, although not material to our consolidated revenue, could have an adverse impact on our financial results.

Seasonality

Our businesses are not subject to seasonal fluctuations to any material extent.

Governmental Contracts

Our business is not subject to a government entity's renegotiation of profits or termination of contracts that would be material to our business as a whole.

Equity Affiliates

Our reporting segments include our share of the results of joint ventures accounted for under the equity method. Our share of our investees' net earnings is primarily presented net of income taxes within "Equity affiliates' income" on our consolidated income statements. The carrying value of our equity method investments is reflected as "Investment in net assets of and advances to equity affiliates" on our consolidated balance sheets. Substantially all our equity method investments are in foreign industrial gas producers, the largest of which operate in China, India, Italy, Mexico, Saudi Arabia, South Africa, and Thailand. For additional information regarding these investments, refer to Note 9, *Equity Affiliates*, to the consolidated financial statements under Item 8 below.

International Operations

Through our subsidiaries, affiliates, and joint ventures accounted for using the equity method, we conduct business in approximately 50 countries and regions outside the United States. Our international businesses are subject to risks customarily encountered in foreign operations, including fluctuations in foreign currency exchange rates and controls, tariffs, trade sanctions, import and export controls, and other economic, political, and regulatory policies of local governments described in Item 1A, *Risk Factors*, below.

We have controlling interests in foreign subsidiaries that operate in Canada and approximately 10 countries in Latin America (primarily Chile and Brazil); approximately 10 countries and regions in Asia (primarily China, South Korea, and Taiwan); approximately 25 countries in the Europe and Africa region (primarily the Netherlands, the countries of the United Kingdom, and Spain); and approximately five countries in the Middle East, primarily Saudi Arabia. As discussed under "Equity Affiliates" above, we also own non-controlling interests in entities operating in Africa, Asia, Europe, Latin America, and the Middle East.

Financial information about our foreign operations and investments is included in Note 9, *Equity Affiliates*; Note 23, *Income Taxes*; and Note 25, *Business Segment and Geographic Information*, to the consolidated financial statements included under Item 8, below. Information about foreign currency translation is included under "Foreign Currency" in Note 1, *Basis of Presentation and Major Accounting Policies*, and information on our exposure to currency fluctuations is included in Note 14, *Financial Instruments*, to the consolidated financial statements, included under Item 8, below, and in "Foreign Currency Exchange Rate Risk," included under Item 7A, below.

Technology Development

We pursue a market-oriented approach to technology development through research and development, engineering, and commercial development processes. We conduct research and development principally in our laboratories located in the United States (Allentown, Pennsylvania), the United Kingdom (Basingstoke and Carrington), Spain (Barcelona), China (Shanghai), and Saudi Arabia (Dhahran). We also fund and cooperate in research and development programs conducted by a number of major universities and undertake research work funded by others, including the United States government.

Development of technology for use within the Industrial Gases business focuses primarily on new and improved processes and equipment for the production and delivery of industrial gases and new or improved applications for industrial gas products.

During fiscal year 2023, we owned approximately 625 United States patents, approximately 3,300 foreign patents, and were a licensee under certain patents owned by others. While the patents and licenses are considered important, we do not consider our business as a whole to be materially dependent upon any particular patent, patent license, or group of patents or licenses.

Environmental Regulation

We are subject to various environmental laws, regulations, and public policies in the countries in which we have operations. Compliance with these measures often results in higher capital expenditures and costs. 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. Our accounting policy for environmental expenditures is discussed in Note 1, *Basis of Presentation and Major Accounting Policies*, and environmental loss contingencies are discussed in Note 18, *Commitments and Contingencies*, to the consolidated financial statements, included under Item 8, below.

Some of our operations are within jurisdictions that have or are developing regulatory regimes governing emissions of greenhouse gases (“GHG”), including CO_2. These include existing coverage under the European Union Emission Trading System, the California Cap-and-Trade Program, China’s Emission Trading Scheme and its nation-wide expansion, and South Korea’s Emission Trading Scheme. In the Netherlands, a CO_2 emissions tax was enacted on 1 January 2021. In Canada, Alberta’s Technology Innovation and Emission Reduction System went into effect 1 January 2020. In Ontario, Environment & Climate Change Canada’s Output Based Pricing System (“OBPS”) was replaced by the GHG Emissions Performance Standards ("EPS") program beginning 1 January 2022. In Singapore, the Carbon Pricing Tax Act was implemented effective 1 January 2019. In Taiwan, Greenhouse Gases Emissions Registration and Verification Management Act will be enforced beginning in 2023. In addition, the U.S. Environmental Protection Agency (“EPA”) requires mandatory reporting of GHG emissions and is regulating GHG emissions for new construction and major modifications to existing facilities. The European Union has issued the Corporate Sustainability Reporting Directive ("CSRD") and California has enacted the Climate Corporate Data Accountability Act and the Climate Related Financial Risk Act that will require reporting and third-party assurance of GHG emissions information for certain entities, and a similar proposal is under consideration by the U.S. Securities and Exchange Commission ("SEC"). Furthermore, some jurisdictions have various mechanisms to target the power sector to achieve emission reductions, which often result in higher power costs.

Increased public concern may result in more international, U.S. federal, and/or regional requirements to reduce or mitigate the effects of GHG emissions. Although uncertain, these developments could increase our costs related to consumption of electric power, hydrogen production and application of our gasification technology. We believe we will be able to mitigate some of the increased costs through contractual terms, but the lack of definitive legislation or regulatory requirements prevents an accurate estimate of the long-term impact these measures will have on our operations. Any legislation that limits or taxes GHG emissions could negatively impact our growth, increase our operating costs, or reduce demand for certain of our products.

Regulation of GHG may also produce new opportunities for us. We continue to develop technologies to help our facilities and our customers lower energy consumption, improve efficiency and lower emissions. We see significant opportunities for hydrogen for mobility and energy transition, carbon capture technologies, and gasification.

Expenditures for capital projects intended to control pollution from existing operating facilities as required under current environmental regulations were not material in fiscal years 2023, 2022, and 2021. We do not expect material expenditures for these projects in fiscal year 2024.

For additional information regarding environmental matters, refer to Note 18, *Commitments and Contingencies*, to the consolidated financial statements.

Sustainability

Sustainability is at the core of our higher purpose to bring people together to collaborate and innovate solutions to the world's most significant energy and environmental sustainability challenges. As of the end of fiscal year 2023, we have committed capital of approximately $15 billion to projects intended to accelerate the energy transition, some of which are already being executed in the United States, Canada, and Saudi Arabia. These low- and zero-carbon hydrogen and other first mover projects demonstrate our commitment to making investments that will make a meaningful difference on climate issues, allowing us to support our customers' sustainability journeys, conserve resources, and care for our employees and communities.

Our Sustainability Report details our growth strategy and the role our employees play in achieving our goals. Our latest Sustainability Report is available at www.airproducts.com/company/sustainability/sustainability-report. The information posted on our website, including our Sustainability Report, is not incorporated by reference into, and does not form part of, this Annual Report on Form 10-K.

Human Capital Management

As of 30 September 2023, we had approximately 23,000 employees, of which over 90% were working full-time and 74% were located outside the United States. We have collective bargaining agreements with unions and works councils at certain locations that expire on various dates over the next four years. Over 20% of our total workforce is covered by such agreements. Overall, we have a corporate strategy supported by our leaders and enabled by a positive organizational culture.

We believe our employees are our most valuable asset and are critical to our success as an organization. Our goal is to be the safest, most diverse, and most profitable industrial gas company in the world, providing excellent service to our customers. Integral to our success is the continued development of our 4S culture (Safety, Speed, Simplicity and Self-Confidence) and creating a work environment where our employees feel that they belong and matter. Our talent-related initiatives, including employee recruitment and development, diversity and inclusion, and compensation and benefit programs, focus on building and retaining the world-class talent needed to execute our two-pillar growth strategy and fulfill Air Products' higher purpose.

Safety

Safety is fundamental to who we are as a company. Safety is a shared value, and our employees' commitment to safety is demonstrated in many ways every day. Safety is a critical component of everything we do, everywhere in the world. Our goal is to be the safest industrial gas company in the world.

Diversity, Inclusion, and Belonging

Our 2023 Sustainability Report sets forth our announced goals to further increase the percentage of women and U.S. minorities in professional and managerial roles and the recruitment and talent development strategies we have in place to ensure we meet these ambitions. By 2025, Air Products aims to achieve at least 28 percent female representation in the professional and managerial population globally, and at least 30 percent minority representation in that same population in the United States. We established these goals following analysis of our global employee representation metrics and future talent needs, as well as assessing industry benchmarks and peer companies. For more information on these initiatives and to access our most recently published Equal Employment Opportunity EEO-1 Report, please refer to our Diversity, Inclusion and Belonging website at www.airproducts.com/company/diversity. The information posted on our website is not incorporated by reference into, and does not form part of, this Annual Report on Form 10-K.

Compensation

As detailed in our 2023 Sustainability Report, in order to create an engaged workforce, individuals must be compensated fairly and equitably. A work environment where employees know they belong and matter includes fair and equitable pay. Our pay practices apply equally to all employees irrespective of gender, race, religion, disability, age, or any other form of personal difference. We pay competitively in local markets where we do business and compete for talent. We benchmark our compensation to ensure we are keeping pace with the market to provide competitive pay and benefits. Our compensation programs are generally comprised of base pay, annual variable pay (bonus), and for eligible employees, long-term incentives (stock awards under the Air Products Long-Term Incentive Plan).

Available Information

All periodic and current reports, registration statements, proxy statements, and other filings that we are required to file with the SEC, including our Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, and amendments to those reports filed or furnished pursuant to Section 13(a) of the Securities Exchange Act of 1934 (the "Exchange Act"), are available free of charge through our website at www.airproducts.com. Such documents are available as soon as reasonably practicable after electronic filing of the material with the SEC. All such reports filed during the period covered by this report were available on our website on the same day as filing. In addition, our filings with the SEC are available free of charge on the SEC's website, www.sec.gov.

Our Executive Officers

Our executive officers and their respective positions and ages on 16 November 2023 follow. Information with respect to offices held is stated in fiscal years.

Name	Age	Office
Seifi Ghasemi	79	Chairman, President, and Chief Executive Officer (became Chairman, President and Chief Executive Officer in 2014 and previously served as Chairman and Chief Executive Officer of Rockwood Holdings, Inc. from 2001 to 2014). Mr. Ghasemi is a member and Chairman of the Board of Directors and the Chairman of the Executive Committee of the Board of Directors.
Sean D. Major	59	Executive Vice President, General Counsel and Secretary since 2017. Previously, Mr. Major served as Executive Vice President, General Counsel and Secretary for Joy Global Inc. from 2007 to 2017.
Melissa N. Schaeffer	44	Senior Vice President and Chief Financial Officer (became Senior Vice President and Chief Financial Officer in August 2021). Ms. Schaeffer joined the Company in 2016 and most recently served as Vice President, Finance – GEMTE, Americas, Middle East, and India from 2020 to 2021 and previously served as Vice President, Chief Audit Executive from 2016 to 2020.
Dr. Samir J. Serhan	62	Chief Operating Officer (Executive Vice President since December 2016 and Chief Operating Officer since May 2020). Dr. Serhan served as President, Global HyCO, from 2014 to 2016 for Praxair Inc. From 2000-2014, he worked in leadership positions in the U.S. and Germany for The Linde Group, including as Managing Director of Linde Engineering from 2008-2014.

Item 1A. Risk Factors

Our operations are affected by various risks, many of which are beyond our control. In evaluating investment in the Company and the forward-looking information contained in this Annual Report on Form 10-K or presented elsewhere from time to time, you should carefully consider the risk factors discussed below. Any of these risks could have a material adverse effect on our business, operating results, financial condition, and the actual outcome of matters as to which forward-looking statements are made and could adversely affect the value of an investment in our securities. The risks described below are not all inclusive but are designed to highlight what we believe are important factors to consider when evaluating our expectations. In addition to such risks, there may be additional risks and uncertainties that adversely affect our business, performance, or financial condition in the future that are not presently known, are not currently believed to be significant, or are not identified below because they are common to all businesses.

Risks Related to Economic Conditions

Changes in global and regional economic conditions, the markets we serve, or the financial markets may adversely affect our results of operations and cash flows.

Unfavorable conditions in the global economy or regional economies, the markets we serve or financial markets may decrease the demand for our goods and services and adversely impact our revenues, operating results, and cash flows.

Demand for our products and services depends in part on the general economic conditions affecting the countries and markets in which we do business. Weak economic conditions in certain geographies and changing supply and demand balances in the markets we serve have negatively impacted demand for our products and services in the past and may do so in the future. In addition, our growth strategy is largely based on demand for technologies and projects that limit the impact of global climate change. Demand for our solutions could be negatively impacted if public and private actors reduce their focus on reducing carbon emissions. Reduced demand for our products and services would have a negative impact on our revenues and earnings. In addition, reduced demand could depress sales, decrease our margins, constrain our operating flexibility or reduce efficient utilization of our manufacturing capacity, or result in charges which are unusual or nonrecurring. Excess capacity in our manufacturing facilities or those of our competitors could decrease our ability to maintain pricing and generate profits.

In addition, our operating results in one or more segments may be affected by uncertain or deteriorating economic conditions for particular customer markets within a segment. A decline in the industries served by our customers or adverse events or circumstances affecting individual customers can reduce demand for our products and services and impair the ability of such customers to satisfy their obligations to us, resulting in uncollected receivables, unanticipated contract terminations, project delays or the inability to recover plant investments, any of which may negatively impact our financial results.

Weak overall demand or specific customer conditions may also cause customer shutdowns or defaults or otherwise make us unable to operate facilities profitably and may force sale or abandonment of facilities and equipment or prevent projects from coming on-stream when expected. These or other events associated with weak economic conditions or specific market, product, or customer events may require us to record an impairment on tangible assets, such as facilities and equipment, or intangible assets, such as intellectual property or goodwill, which would have a negative impact on our financial results.

Our extensive international operations can be adversely impacted by operational, economic, political, security, legal, and currency translation risks that could decrease profitability.

In fiscal year 2023, approximately 60% of our sales were derived from customers outside the United States and many of our operations, suppliers, and employees are located outside the United States. Our operations in foreign jurisdictions may be subject to risks including exchange control regulations, import and trade restrictions, trade policy and other potentially detrimental domestic and foreign governmental practices or policies affecting U.S. companies doing business abroad. Changing economic and political conditions within foreign jurisdictions, strained relations between countries, or the imposition of tariffs or international sanctions can cause fluctuations in demand, price volatility, supply disruptions, or loss of property. The occurrence of any of these risks could have a material adverse impact on our financial condition, results of operation, and cash flows.

Our growth strategies depend in part on our ability to further penetrate markets outside the United States, such as China, India, and the Middle East, and involve significantly larger and more complex projects, including gasification and large-scale hydrogen projects, some in regions where there is the potential for significant economic and political disruptions. We are actively investing large amounts of capital and other resources, in some cases through joint ventures, in developing markets, which we believe to have high growth potential. Our operations in these markets may be subject to greater risks than those faced by our operations in mature economies, including political and economic instability, project delay or abandonment due to unanticipated government actions, inadequate investment in infrastructure, undeveloped property rights and legal systems, unfamiliar regulatory environments, relationships with local partners, language and cultural differences and increased difficulty recruiting, training and retaining qualified employees. In addition, our properties and contracts in these locations may be subject to seizure and cancellation, respectively, without full compensation for loss. Successful operation of particular facilities or execution of projects may be disrupted by civil unrest, acts of war, sabotage or terrorism, and other local security concerns. Such concerns may require us to incur greater costs for security or require us to shut down operations for a period of time.

Furthermore, because the majority of our revenue is generated from sales outside the United States, we are exposed to fluctuations in foreign currency exchange rates. Our business is primarily exposed to translational currency risk as the results of our foreign operations are translated into U.S. dollars at current exchange rates throughout the fiscal period. Our policy is to minimize cash flow volatility from changes in currency exchange rates. We choose not to hedge the translation of our foreign subsidiaries' earnings into dollars. Accordingly, reported sales, net earnings, cash flows, and fair values have been, and in the future will be, affected by changes in foreign exchange rates. For a more detailed discussion of currency exposure, see Item 7A, *Quantitative and Qualitative Disclosures About Market Risk*, below.

Risks Related to Our Business

Risks related to the approval, execution, and operation of our projects, particularly with respect to our largest projects, may adversely affect our operations or financial results.

A significant and growing portion of our business involves clean hydrogen, carbon capture, gasification, and other large-scale projects that involve challenging engineering, procurement and construction phases that may last several years and involve the investment of billions of dollars. These projects are technically complex, often reliant on significant interaction with government authorities, and face significant financing, development, operational, and reputational risks. These projects may also be subject to complex government approvals, as well as legal or regulatory challenges by government authorities or third parties. Delays in receiving required approvals or related to litigation could require us to delay or abandon certain projects, which may result in the incurrence of additional expense, the loss of invested proceeds and reputational damage.

We have in the past and may in the future encounter difficulties related to the development of projects that may result in delays, scope changes and additional costs. Such difficulties may relate to engineering, delays in designs or materials provided by the customer or a third party, equipment and materials delivery delays, schedule changes, customer scope changes, delays related to obtaining regulatory permits and rights-of-way, inability to find adequate sources of labor in the locations where we are building new plants, weather-related delays, delays by customers' contractors in completing their portion of a project, technical or transportation difficulties, cost overruns, supply difficulties, geopolitical risks and other factors, many of which are beyond our control, that may impact our ability to complete a project within the original delivery schedule. In some cases, delays and additional costs may be substantial and could have a material adverse effect on our financial condition and results of operations. We also may be required to cancel a project and/or compensate the customer for the delay, which may also cause us to incur material costs that we may be unable to recover. In addition, in some cases we seek financing for large projects and face market risk associated with the availability and terms of such financing. These financing arrangements may require that we comply with certain performance requirements which, if not met, could result in default and restructuring costs or other losses. All of these factors could also negatively impact our reputation or relationships with our customers, suppliers and other third parties, any of which could adversely affect our ability to secure new projects in the future.

In addition, several of our large-scale projects are being built before finalization of offtake agreements, which may create uncertainty regarding future pricing and other commercial terms. If we are unable to enter into favorable commercial agreements with prospective customers, our projected returns could be adversely impacted, which may harm our business and financial performance.

The operation of our facilities, pipelines, and delivery systems inherently entails hazards that require continuous oversight and control, such as pipeline leaks and ruptures, fire, explosions, toxic releases, mechanical failures, vehicle accidents, or cyber incidents. If operational risks materialize, they could result in loss of life, damage to the environment, or loss of production, all of which could negatively impact our ongoing operations, reputation, financial results, and cash flows. In addition, our operating results are dependent on the continued operation of our production facilities and our ability to meet customer requirements, which depend, in part, on our ability to properly maintain and replace aging assets.

We are subject to extensive government regulation in the jurisdictions in which we do business. Regulations addressing, among other things, import/export restrictions, anti-bribery and corruption, and taxes, can negatively impact our financial condition, results of operation, and cash flows.

We are subject to government regulation in the United States and in the foreign jurisdictions where we conduct business. The application of laws and regulations to our business is sometimes unclear. Compliance with laws and regulations may involve significant costs or require changes in business practices that could result in reduced profitability. If there is a determination that we have failed to comply with applicable laws or regulations, we may be subject to penalties or sanctions that could adversely impact our reputation and financial results. Compliance with changes in laws or regulations can result in increased operating costs and require additional, unplanned capital expenditures. Export controls or other regulatory restrictions could prevent us from shipping our products to and from some markets or increase the cost of doing so. Changes in tax laws and regulations and international tax treaties could affect the financial results of our businesses. Increasingly aggressive enforcement of anti-bribery and anti-corruption requirements, including the U.S. Foreign Corrupt Practices Act, the United Kingdom Bribery Act and the China Anti-Unfair Competition Law, could subject us to criminal or civil sanctions if a violation is deemed to have occurred. In addition, we are subject to laws and sanctions imposed by the U.S. and other jurisdictions where we do business that may prohibit us, or certain of our affiliates, from doing business in certain countries, or restricting the kind of business that we may conduct. Such restrictions may provide a competitive advantage to competitors who are not subject to comparable restrictions or prevent us from taking advantage of growth opportunities.

Further, we cannot guarantee that our internal controls and compliance systems will always protect us from acts committed by employees, agents, business partners or that businesses that we acquire would not violate U.S. and/or non-U.S. laws, including the laws governing payments to government officials, bribery, fraud, kickbacks and false claims, pricing, sales and marketing practices, conflicts of interest, competition, export and import compliance, money laundering, and data privacy. Any such improper actions or allegations of such acts could damage our reputation and subject us to civil or criminal investigations in the U.S. and in other jurisdictions and related shareholder lawsuits, could lead to substantial civil and criminal, monetary and non-monetary penalties, and could cause us to incur significant legal and investigatory fees. In addition, the government may seek to hold us liable as a successor for violations committed by companies in which we invest or that we acquire.

We may be unable to successfully identify, execute or effectively integrate acquisitions, manage our joint ventures, or effectively disentangle divested businesses.

Our ability to grow revenue, earnings, and cash flow at anticipated rates depends in part on our ability to identify, successfully acquire and integrate businesses and assets at appropriate prices, and realize expected growth, synergies, and operating efficiencies. We may not be able to complete transactions on favorable terms, on a timely basis or at all. In addition, our results of operations and cash flows may be adversely impacted by the failure of acquired businesses or assets to meet expected returns, the failure to integrate acquired businesses, the inability to dispose of non-core assets and businesses on satisfactory terms and conditions, and the discovery of unanticipated liabilities or other problems in acquired businesses or assets for which we lack adequate contractual protections or insurance. In addition, we may incur asset impairment charges related to acquisitions that do not meet expectations.

In addition, some of our largest projects involve joint ventures. These arrangements may involve significant risks and uncertainties, including our ability to cooperate with our strategic partners, our strategic partners having interests or goals that are inconsistent with ours, and the potential that our strategic partners may be unable to meet their economic or other obligations to the joint venture, which may negatively impact the expected benefits of the joint venture and cause us to incur additional expense or suffer reputational damage. In addition, due to the nature of these arrangements, we may have limited ability to direct or influence the management of the joint venture, which may limit our ability to assist and oversee the design and implementation of the joint venture's business as well as its accounting, legal, governance, human resources, information technology, and other administrative systems. This may expose us to additional risks and uncertainties because we may be dependent upon and subject to liability, losses, or reputational damage relating to systems, controls, and personnel that are not under our control. These risks may be augmented when the joint venture is operating outside the United States due to differences in language, culture, and regulation, as well as the factors listed above that are relevant to our international operations.

We continually assess the strategic fit of our existing businesses and may divest businesses that are deemed not to fit with our strategic plan or are not achieving the desired return on investment. These transactions pose risks and challenges that could negatively impact our business and financial statements. For example, when we decide to sell or otherwise dispose of a business or assets, we may be unable to do so on satisfactory terms within our anticipated time frame or at all. In addition, divestitures or other dispositions may dilute our earnings per share, have other adverse financial and accounting impacts, distract management, and give rise to disputes with buyers. In addition, we have agreed, and may in the future agree, to indemnify buyers against known and unknown contingent liabilities. Our financial results could be impacted adversely by claims under these indemnification provisions.

The security of our information technology systems could be compromised, which could adversely affect our ability to operate.

We depend on information technology to enable us to operate safely and efficiently and interface with our customers as well as to maintain our internal control environment and financial reporting accuracy and efficiency. Our information technology capabilities are delivered through a combination of internal and external services and service providers. If we do not allocate and effectively manage the resources necessary to build and sustain the proper technology infrastructure, we could be subject to transaction errors, processing inefficiencies, the loss of customers, business disruptions, property damage, or the loss of or damage to our confidential business information due to a security breach. In addition, our information technology systems may be damaged, disrupted or shut down due to attacks by computer hackers, computer viruses, employee error or malfeasance, power outages, hardware failures, telecommunication or utility failures, catastrophes or other unforeseen events, and in any such circumstances our system redundancy and other disaster recovery planning may be ineffective or inadequate. Security breaches of our systems (or the systems of our customers, suppliers or other business partners) could result in the misappropriation, destruction or unauthorized access or disclosure of confidential information or personal data belonging to us or to our employees, partners, customers or suppliers, and may subject us to legal liability.

As with most large systems, our information technology systems have in the past been, and in the future likely will be subject to computer viruses, malicious codes, unauthorized access and other cyber-attacks, and we expect the sophistication and frequency of such attacks to continue to increase. To date, we are not aware of any significant impact on our operations or financial results from such attempts; however, unauthorized access could disrupt our business operations, result in the loss of assets, and have a material adverse effect on our business, financial condition, or results of operations. Any of the attacks, breaches or other disruptions or damage described above could: interrupt our operations at one or more sites; delay production and shipments; result in the theft of our and our customers' intellectual property and trade secrets; damage customer and business partner relationships and our reputation; result in defective products or services, physical damage to facilities, pipelines or delivery systems, including those we own or operate for third parties, legal claims and proceedings, liability and penalties under privacy laws, or increased costs for security and remediation; or raise concerns regarding our internal control environment and internal control over financial reporting. Each of these consequences could adversely affect our business, reputation and our financial statements.

Our business involves the use, storage, and transmission of information about our employees, vendors, and customers. The protection of such information, as well as our proprietary information, is critical to us. The regulatory environment surrounding information security and privacy is increasingly demanding, with the frequent imposition of new and constantly changing requirements. We have established policies and procedures to help protect the security and privacy of this information. We also, from time to time, export sensitive customer data and technical information to recipients outside the United States. Breaches of our security measures or the accidental loss, inadvertent disclosure, or unapproved dissemination of proprietary information or sensitive or confidential data about us or our customers, including the potential loss or disclosure of such information or data as a result of fraud, trickery, or other forms of deception, could expose us, our customers, or the individuals affected to a risk of loss or misuse of this information, which could ultimately result in litigation and potential legal and financial liability. These events could also damage our reputation or otherwise harm our business.

Interruption in ordinary sources of raw material or energy supply or an inability to recover increases in energy and raw material costs from customers could result in lost sales or reduced profitability.

Hydrocarbons, including natural gas, are the primary feedstock for the production of hydrogen, carbon monoxide, and syngas. Energy, including electricity, natural gas, and diesel fuel for delivery trucks, is the largest cost component of our business. Because our industrial gas facilities use substantial amounts of electricity, inflation and energy price fluctuations have impacted our revenues and earnings and may continue to do so in the future. A disruption in the supply of energy, components, or raw materials, whether due to market conditions, legislative or regulatory actions, natural disasters, public health crises and pandemics, or other disruption, could prevent us from meeting our contractual commitments and harm our business and financial results.

Our supply of crude helium for purification and resale is largely dependent upon natural gas production by crude helium suppliers. Lower natural gas production resulting from natural gas pricing dynamics, supplier operating or transportation issues, or other interruptions in sales from crude helium suppliers, can reduce our supplies of crude helium available for processing and resale to customers.

We typically contract to pass-through cost increases in energy and raw materials to customers, but such cost pass-through results in declining margins, and cost variability can negatively impact our other operating results. For example, we may be unable to raise prices as quickly as costs rise, or competitive pressures may prevent full recovery of such costs. In addition, increases in energy or raw material costs that cannot be passed on to customers for competitive or other reasons may negatively impact our revenues and earnings. Even where costs are passed through, price increases can cause lower sales volume.

New technologies create performance risks that could impact our financial results or reputation.

We are continually developing and implementing new technologies and product offerings. Existing technologies are being implemented in products and designs or at scales beyond our experience base. These technological expansions can create nontraditional performance risks to our operations. Failure of the technologies to work as predicted, or unintended consequences of new designs or uses, could lead to cost overruns, project delays, financial penalties, or damage to our reputation. We may face difficulties marketing products produced using new technologies including, but not limited to, green hydrogen, which may adversely impact our sales and financial results. In addition, certain large-scale projects may contain processes or technologies that we have not operated at the same scale or in the same combination, and although such projects generally include technologies and processes that have been demonstrated previously by others, such technologies or processes may be new to us and may introduce new risks to our operations. Additionally, there is also a risk that our new technologies may become obsolete and be replaced by other market alternatives. Performance difficulties on these larger projects may have a material adverse effect on our operations and financial results. In addition, performance challenges may adversely affect our reputation and our ability to obtain future contracts.

Protecting our intellectual property is critical to our technological development, and we may suffer competitive harm from infringement on such rights.

As we develop new technologies, it is critical that we protect our intellectual property assets against third-party infringement. We own a number of patents and other forms of intellectual property related to our products and services. As we develop new technologies there is a risk that our patent applications may not be granted, or we may not receive sufficient protection of our proprietary interests. We may also expend considerable resources in defending our patents against third-party infringement. It is critical that we protect our proprietary interests to prevent competitive harm.

Legal and Regulatory Risks

Legislative, regulatory, societal, and market efforts to address global climate change may impact our business and create financial risk.

We are the world's leading supplier of hydrogen, the primary use of which is the production of ultra-low sulfur transportation fuels that have significantly reduced transportation emissions and helped improve human health. To make the high volumes of hydrogen needed by our customers, we have historically used steam methane reforming to produce hydrogen without carbon capture (i.e., "gray hydrogen"), which results in the emission of carbon dioxide. In addition, gasification enables the conversion of lower value feedstocks into cleaner energy and value-added products; however, our gasification projects also produce carbon dioxide. Some of our operations are within jurisdictions that have or are developing regulatory regimes governing disclosure of GHG emissions, including CO_2, such as the European Union's CSRD, California's Climate Corporate Data Accountability Act and Climate Related Financial Risk Act, and similar regulations under consideration by the SEC, which may lead to direct and indirect costs on our operations. We could also face scrutiny from stakeholders regarding our reporting under various frameworks for disclosing GHG emissions-related data, including those we use currently in our sustainability reporting. If our GHG emissions-related data, processes, and reporting are incomplete or inaccurate, or if we fail to comply with relevant reporting frameworks from newly emerging regulations, we may incur monetary penalties and reputational harm, and we could become subject to litigation or government investigations, which may also adversely affect our reputation and business.

Increased public concern and governmental action may result in more international, U.S. federal and/or regional requirements to reduce or mitigate the effects of GHG emissions or increased demand for technologies and projects to limit the impact of global climate change. Although uncertain, these developments could increase our costs related to consumption of electric power, hydrogen production, and application of our gasification technology, although these developments may be mitigated by our growth strategy focused on world-scale clean hydrogen projects. We believe we will be able to mitigate some of the increased costs through contractual terms, but the lack of definitive legislation or regulatory requirements prevents an accurate estimate of the long-term impact these measures will have on our operations. Any legislation or governmental action that limits or taxes GHG emissions could negatively impact our growth, increase our operating costs, or reduce demand for certain of our products, particularly for our core industrial gases business.

In addition, our growth strategy is partially dependent on a regulatory environment that favors technologies focused on limiting the impact of climate change, in particular toward the production and distribution of clean hydrogen. For example, we anticipate benefits from tax incentives created by the U.S. Inflation Reduction Act of 2022 for carbon sequestration and clean hydrogen production in future years once our projects in these areas come on-stream in the U.S. If there is a reversal in the regulatory environment or a discontinuation or reduction of incentives or benefits for the development of technologies limiting the impact of climate change, particularly those focused on low- and zero-carbon hydrogen production, demand for our products may be less than we anticipate and certain projects and our long-term growth strategy could be adversely affected, which could adversely affect our business and financial performance.

Our operations may present a safety risk to our employees.

Notwithstanding our emphasis on the safety of our employees and contractors and the precautions we take related to health and safety, we may be unable to avoid safety incidents relating to our operations that result in injuries or deaths. Certain safety incidents may result in legal or regulatory action that could result in increased expenses or reputational damage. We maintain workers' compensation insurance to address the risk of incurring material liabilities for injuries or deaths, but there can be no assurance that the insurance coverage will be adequate or will continue to be available on terms acceptable to us, or at all, which could result in material liabilities to us for any injuries or deaths. Changes to federal, state, and local employee health and safety regulations, and legislative, regulatory, or societal responses to safety incidents may result in heightened regulations or public scrutiny that may increase our compliance costs or result in reputational damage.

Our business depends on our ability to attract, develop, engage, and retain qualified employees.

Our success depends on our ability to attract, develop, engage, and retain employees with the skills necessary to our business. Competitive labor market conditions have resulted in increased demand for qualified personnel, which makes it difficult to attract, hire, and retain employees with specialized technical experience. In addition, the increasing number of experienced employees becoming retirement-eligible and our company headcount growth further amplify this challenge. The number of our employees has grown both internationally and in the United States, with our total headcount increasing from approximately 16,300 at the end of fiscal 2018 to approximately 23,000 at the end of fiscal 2023. Our results of operations have been and in the future could be adversely affected by increased costs due to increased competition for skilled talent in the market. In addition, increased turnover and decreased tenure of employees may impact productivity, costs, and organizational culture. We undertake significant efforts to hire, engage, and retain our employees and to effectively manage workforce costs, even with rapid political, social, and economic shifts in our markets. If these efforts are unsuccessful, our growth may be limited and we may suffer financial or reputational harm that could have a material adverse effect on our business, financial condition, or results of operations.

Our financial results may be affected by various legal and regulatory proceedings, including antitrust, tax, environmental, or other matters.

We are subject to litigation and regulatory investigations and proceedings in the normal course of business and could become subject to additional claims in the future, some of which could be material. While we seek to limit our liability in our commercial contractual arrangements, there are no guarantees that each contract will contain suitable limitations of liability or that limitations of liability will be enforceable. Also, the outcome of existing legal proceedings may differ from our expectations because the outcomes of litigation, including regulatory matters, are often difficult to predict reliably. Various factors or developments can lead us to change current estimates of liabilities and related insurance receivables, where applicable, or make such estimates for matters previously not susceptible to reasonable estimates, such as a significant judicial ruling or judgment, a significant settlement, significant regulatory developments, or changes in applicable law. A future adverse ruling, settlement, or unfavorable development could result in charges that could have a material adverse effect on our financial condition, results of operations, and cash flows in any particular period.

Costs and expenses resulting from compliance with environmental regulations may negatively impact our operations and financial results.

We are subject to extensive federal, state, local, and foreign environmental and safety laws and regulations concerning, among other things, emissions in the air; discharges to land and water; and the generation, handling, treatment, and disposal of hazardous waste and other materials. We take our environmental responsibilities very seriously, but there is a risk of adverse environmental impact inherent in our manufacturing operations and in the transportation of our products. Future developments and more stringent environmental regulations may require us to make additional unforeseen environmental expenditures. In addition, laws and regulations may require significant expenditures for environmental protection equipment, compliance, and remediation. These additional costs may adversely affect our financial results. For a more detailed description of these matters, see Item 1, *Business–Environmental Regulation*, above.

A change of tax law in key jurisdictions could result in a material increase in our tax expense.

The multinational nature of our business subjects us to taxation in the United States and numerous foreign jurisdictions. Due to economic and political conditions, tax rates in various jurisdictions may be subject to significant change. Our future effective tax rates could be affected by changes in the mix of earnings in countries with differing statutory tax rates, changes in the valuation of deferred tax assets and liabilities, or changes in tax laws or their interpretation.

Changes to income tax laws and regulations in any of the jurisdictions in which we operate, or in the interpretation of such laws, could significantly increase our effective tax rate and adversely impact our financial condition, results of operations, or cash flows. Various levels of government, including the U.S. federal government, are increasingly focused on tax reform and other legislative action to increase tax revenue. Further changes in tax laws in the U.S. or foreign jurisdictions where we operate could have a material adverse effect on our business, results of operations, or financial condition.

General Risk Factors

Catastrophic events could disrupt our operations or the operations of our suppliers or customers, having a negative impact on our business, financial results, and cash flows.

Our operations could be impacted by catastrophic events outside our control, including severe weather conditions such as hurricanes, floods, earthquakes, storms, epidemics, pandemics, acts of war, and terrorism. Any such event could cause a serious business disruption that could affect our ability to produce and distribute products and possibly expose us to third-party liability claims. Additionally, such events could impact our suppliers, customers, and partners, which could cause energy and raw materials to be unavailable to us, or our customers to be unable to purchase or accept our products and services. Any such occurrence could have a negative impact on our operations and financial results.

Inability to compete effectively in a segment could adversely impact sales and financial performance.

We face strong competition from large global competitors and many smaller regional competitors in many of our business segments. Introduction by competitors of new technologies, competing products, or additional capacity could weaken demand for, or impact pricing of our products, negatively impacting financial results. In addition, competitors' pricing policies could affect our profitability or market share.

Item 1B. Unresolved Staff Comments

We have not received any written comments from the Commission staff that remain unresolved.

Item 2. Properties

Air Products and Chemicals, Inc. owns its principal administrative offices located at the Company's new global headquarters and co-located research and development facility in Allentown, Pennsylvania, as well as regional offices in Hersham, England; Medellin, Colombia; and Santiago, Chile. We lease the principal administrative offices in Shanghai, China; Pune, India; Vadodara, India; and Dhahran, Saudi Arabia. We lease administrative offices in the United States, Canada, Spain, Malaysia, and China, primarily for our Finance and Business Services organization.

Descriptions of the properties used by our five business segments are provided below. We believe that our facilities are suitable and adequate for our current and anticipated future levels of operation.

Americas

Our Americas segment operates from approximately 450 production and distribution facilities in North and South America. Of these facilities, approximately 25% are located on owned property. We have sufficient property rights and permits for the ongoing operation of our pipeline systems in the Gulf Coast, California, and Arizona in the United States and Alberta and Ontario in Canada. Management and sales support is based in our Allentown, Medellin, and Santiago offices referred to above, and at approximately 20 leased properties located throughout North and South America.

Asia

Our Asia segment operates from approximately 300 production and distribution facilities within the region, of which approximately 35% are on owned property or long-duration term grants. We have sufficient property rights and permits for the ongoing operation of our pipeline systems in China, South Korea, Taiwan, Malaysia, Singapore, and Indonesia. Management and sales support for this business segment is based in Shanghai, China, and Kuala Lumpur, Malaysia, and in approximately 35 leased office locations throughout the region.

Europe

Our Europe segment operates from approximately 210 production and distribution facilities in Europe, of which approximately 35% are on owned property. We have sufficient property rights and permits for the ongoing operation of our pipeline systems in the Netherlands, the United Kingdom, Belgium, France, and Germany. Management and sales support for this business segment is based in Hersham, England; Barcelona, Spain; and at 15 leased regional office sites and 10 leased local office sites throughout the region.

Middle East and India

Our Middle East and India segment operates from approximately 15 production and distribution facilities throughout the region, all of which are leasehold properties. Management and sales support for this business segment are based in Dharan, Saudi Arabia; Dubai, United Arab Emirates; and Pune, India; as well as approximately 10 leased local office sites throughout the region.

Corporate and other

This business segment includes our sale of equipment businesses for which equipment is manufactured in Missouri in the United States and Shanghai, China. The LNG business operates a manufacturing facility in Florida in the United States with management, engineering, and sales support based in the Allentown offices referred to above. The Gardner Cryogenic business operates at facilities in Pennsylvania and Kansas in the United States. The Rotoflow business operates manufacturing and service facilities in Texas and Pennsylvania in the United States with management, engineering, and sales support based in the Allentown offices referred to above and a nearby leased office.

Research and development activities are primarily conducted at owned locations in the United States, the United Kingdom, and Saudi Arabia.

Helium is processed at multiple sites in the United States and then distributed to and from transfill sites globally.

Our Corporate and other segment also has management, sales, engineering support, and corporate administrative functions that are based in our administrative offices referred to above.

Item 3. Legal Proceedings

In the normal course of business, we and our subsidiaries are involved in various legal proceedings, including commercial, competition, environmental, intellectual property, regulatory, product liability, and insurance matters. Although litigation with respect to these matters is routine and incidental to the conduct of our business, such litigation could result in large monetary awards, especially if compensatory and/or punitive damages are awarded. However, we believe that litigation currently pending to which we are a party will be resolved without any material adverse effect on our financial position, earnings, or cash flows.

From time to time, we are also involved in proceedings, investigations, and audits involving governmental authorities in connection with environmental, health, safety, competition, and tax matters.

We are a party to proceedings under CERCLA, RCRA, and similar state and foreign environmental laws relating to the designation of certain sites for investigation or remediation. Presently there are 27 sites on which a final settlement has not been reached where we, usually 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 do not expect that any sums we may have to pay in connection with these environmental matters would have a material adverse impact on our consolidated financial position. Additional information on our environmental exposure is included under Item 1, Business–Environmental Regulation, and Note 18, *Commitments and Contingencies*, to the consolidated financial statements.

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 $36 million at 30 September 2023) on Air Products Brasil Ltda. This fine was based on a recommendation by a unit of the Brazilian Ministry of Justice, following an investigation beginning in 2003, which alleged 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. In the event of an adverse final judgment, we estimate the maximum possible loss to be the full amount of the fine of R$179.2 million (approximately $36 million at 30 September 2023) plus interest accrued thereon until final disposition of the proceedings.

In April 2023, we received a favorable ruling from a Texas state court in litigation involving disputed energy management charges related to Winter Storm Uri, a severe winter weather storm that impacted the U.S. Gulf Coast in February 2021. The ruling is subject to appeal and had no impact on our consolidated financial statements for the fiscal year ended 30 September 2023.

Other than the matters discussed above, 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. However, a future charge for regulatory fines or damage awards could have a significant impact on our net income in the period in which it is recorded.

Item 4. Mine Safety Disclosures

Not applicable.

PART II

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

Our common stock is listed on the New York Stock Exchange under the symbol "APD." As of 31 October 2023, there were 4,425 record holders of our common stock.

Cash dividends on our common stock are paid quarterly. We expect to continue increasing our quarterly dividend as we have done for the last 41 consecutive years. The Board of Directors determines whether to declare dividends and the timing and amount based on financial condition and other factors it deems relevant. Dividend information for each quarter of fiscal years 2023 and 2022 is summarized below:

	2023	2022
Fourth quarter	**$1.75**	$1.62
Third quarter	**1.75**	1.62
Second quarter	**1.75**	1.62
First quarter	**1.62**	1.50
Total	**$6.87**	$6.36

Purchases of Equity Securities by the Issuer

On 15 September 2011, the Board of Directors authorized the repurchase of up to $1.0 billion of our outstanding common stock. This program does not have a stated expiration date. If we repurchase shares pursuant to this authorization, we may do so under Rules 10b5-1 and 10b-18 under the Exchange Act through repurchase agreements established with one or more brokers. We did not purchase any of our outstanding shares during fiscal year 2023. As of 30 September 2023, $485.3 million in share repurchase authorization remained. Any future purchases will be completed at our discretion while maintaining sufficient funds for investing in our business and pursuing growth opportunities.

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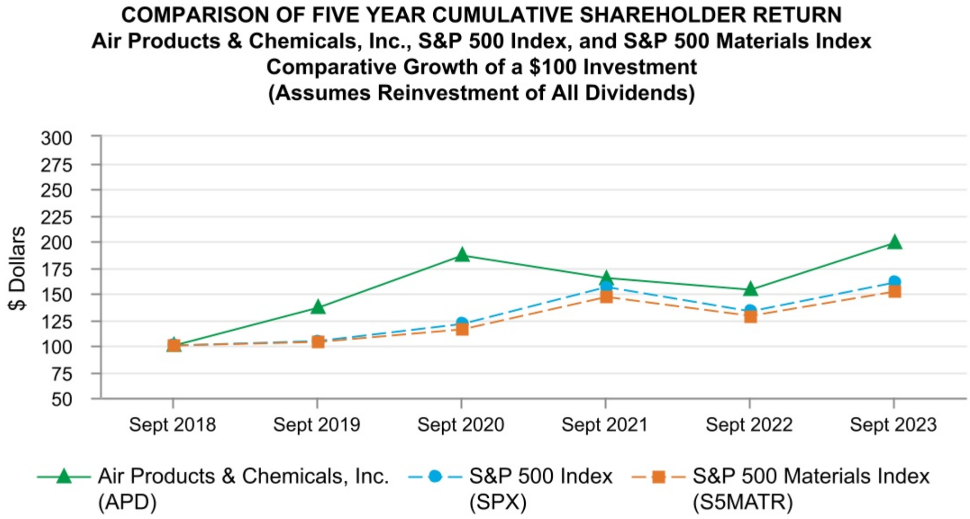
Performance Graph

The performance graph below compares the five-year cumulative returns of our common stock with those of the Standard & Poor’s 500 Index ("S&P 500 Index") and the Standard & Poor’s 500 Materials Index ("S&P 500 Materials Index"). The figures assume an initial investment of $100 and the reinvestment of all dividends.



	Sept 2018	Sept 2019	Sept 2020	Sept 2021	Sept 2022	Sept 2023
Air Products & Chemicals, Inc.	100	136	186	164	153	198
S&P 500 Index	100	104	120	156	132	160
S&P 500 Materials Index	100	103	115	146	128	151

Item 6. [Reserved]

Not applicable.

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

This Management's Discussion and Analysis contains "forward-looking statements" within the safe harbor provisions of the Private Securities Litigation Reform Act of 1995, including statements about business outlook. These forward-looking statements are based on management's expectations and assumptions as of the date of this Annual Report on Form 10-K and are not guarantees of future performance. Actual performance and financial results may differ materially from projections and estimates expressed in the forward-looking statements because of many factors not anticipated by management, including, without limitation, those described in "*Forward-Looking Statements"* and Item 1A, *Risk Factors*, of this Annual Report on Form 10-K.

This discussion should be read in conjunction with the consolidated financial statements and the accompanying notes contained in this Annual Report on Form 10-K. Unless otherwise stated, financial information is presented in millions of U.S. Dollars, except for per share data. Except for net income, which includes the results of discontinued operations, financial information is presented on a continuing operations basis.

The financial measures discussed below are presented in accordance with U.S. generally accepted accounting principles ("GAAP"), except as noted. We present certain financial measures on an "adjusted," or "non-GAAP," basis because we believe such measures, when viewed together with financial results computed in accordance with GAAP, provide a more complete understanding of the factors and trends affecting our historical financial performance. For each non-GAAP financial measure, including adjusted diluted earnings per share ("EPS"), adjusted EBITDA, adjusted EBITDA margin, adjusted effective tax rate, and capital expenditures, we present a reconciliation to the most directly comparable financial measure calculated in accordance with GAAP. These reconciliations and explanations regarding the use of non-GAAP measures are presented under the "*Reconciliations of Non-GAAP Financial Measures*" section beginning on page 33.

Comparisons included in the discussion that follows are for fiscal year 2023 versus ("vs.") fiscal year 2022. A discussion of changes from fiscal year 2021 to fiscal year 2022 and other financial information related to fiscal year 2021 is available in Part II, Item 7, *Management's Discussion and Analysis of Financial Condition and Results of Operations*, of our Annual Report on Form 10-K for the fiscal year ended 30 September 2022, which was filed with the SEC on 22 November 2022.

For information concerning activity with our related parties, refer to Note 24, *Supplemental Information*, to the consolidated financial statements.

BUSINESS OVERVIEW

Founded in 1940, Air Products and Chemicals, Inc. is a world-leading industrial gases company that has built a reputation for its innovative culture, operational excellence, and commitment to safety and the environment. Approximately 23,000 passionate, talented, and committed employees from diverse backgrounds together are driven by Air Products' higher purpose to create innovative solutions that benefit the environment, enhance sustainability, and reimagine what is possible to address the challenges facing customers, communities, and the world.

Our products and services enable our customers to improve their environmental performance, product quality, and productivity. Our core business provides essential gases, related equipment, and applications expertise to customers in dozens of industries, including refining, chemicals, metals, electronics, manufacturing, medical, and food. We also develop, engineer, build, own, and operate some of the world's largest clean hydrogen projects that will support the transition to low- and zero-carbon energy in the heavy-duty transportation and industrial sectors. Additionally, we are the world leader in the supply of LNG process technology and equipment and provide turbomachinery, membrane systems, and cryogenic containers globally. For additional information on our product and service offerings, including production, distribution, and end use, refer to Item 1, *Business*, of this Annual Report on Form 10-K.

Air Products conducts business in approximately 50 countries and regions throughout the world. Our industrial gases business is organized and operated regionally in the Americas, Asia, Europe, and Middle East and India segments and generates the majority of our sales via our on-site and merchant supply modes. Approximately half our total revenue is generated through the on-site supply mode, which is governed by contracts that are generally long-term in nature with provisions that allow us to pass through changes in energy costs to our customers. Our Corporate and other segment includes the results of our sale of equipment businesses, costs for corporate support functions and global management activities, and other income and expenses not directly associated with the regional segments, such as foreign exchange gains and losses. For additional information regarding our supply modes and business segments, refer to Note 6, *Revenue Recognition*, and Note 25, *Business Segment and Geographic Information*, to the consolidated financial statements.

2023 IN SUMMARY

In fiscal year 2023, we achieved earnings growth through pricing discipline in our merchant business as well as improved on-site volumes, including higher demand for hydrogen, despite inflation, higher maintenance activities, and higher costs to support our long-term strategy. Due to the structure of our contracts, which generally contain fixed monthly charges and/or minimum purchase requirements, our on-site business generates stable cash flow and consistently contributes about half our total sales, regardless of the economic environment. We also recognized higher income from our equity affiliates due to the contribution of the second phase of the Jazan gasification and power project and positive results from other unconsolidated joint ventures across the regions.

Additionally, we successfully secured capital to fund low- and zero-carbon hydrogen growth projects. In March, we issued our inaugural green bonds in concurrent $600 and €700 million debt offerings, making Air Products the first U.S. chemical company to qualify green and blue hydrogen projects as an eligible expenditure category. Additionally, in May, our NEOM Green Hydrogen Company joint venture completed financial close on the world's largest green hydrogen-based ammonia production facility, securing $6.1 billion of non-recourse financing from local, regional, and international banks and financial institutions. This funding is an important strategic milestone that will allow us to continue executing projects that will accelerate the energy transition while creating long-term value for our shareholders.

In addition to investing in high return projects, we believe creating shareholder value includes paying quarterly cash dividends on our common stock, which we have increased for 41 consecutive years. In fiscal year 2023, we increased our dividend to $1.75 per share, representing an 8% increase, or $0.13 per share, from the previous dividend of $1.62 per share.

Fiscal Year 2023 Highlights

- Sales of $12.6 billion decreased 1%, or $98.6, as lower energy cost pass-through to customers of 6% and unfavorable currency of 3% were mostly offset by higher pricing of 5% and higher volumes of 3%.
- Operating income of $2.5 billion increased 7%, or $155.8, as our pricing actions and higher volumes were partially offset by higher costs and unfavorable currency. Additionally, we recorded higher charges for business and asset actions in fiscal year 2023 compared to fiscal year 2022. Operating margin of 19.8% increased 140 basis points ("bp") from 18.4% in the prior year, which included a positive impact from lower energy cost pass-through to customers in 2023.
- Equity affiliates' income of $604.3 increased 26%, or $122.8, primarily due to a higher contribution from the Jazan Integrated Gasification and Power Company ("JIGPC") joint venture, which completed the second phase of the asset purchase associated with the Jazan gasification and power project in January 2023, as well as higher income from our affiliates in Italy and Mexico. The prior year included recognition of the remaining deferred profit associated with air separation units previously sold to Jazan Gas Project Company, which was partially offset by an impairment charge related to two small affiliates in our Asia segment.
- Net income of $2.3 billion increased 3%, or $72.1, primarily due to favorable pricing, net of power and fuel costs, partially offset by a charge for business and asset actions, higher non-service pension costs, and higher other costs. Net income margin of 18.6% increased 80 bp from 17.8% in the prior year, which included a positive impact from lower energy cost pass-through.
- Adjusted EBITDA of $4.7 billion increased 11%, or $454.8, and adjusted EBITDA margin of 37.3% increased 390 bp from 33.4% in the prior year.
- Diluted EPS of $10.30 increased 2%, or $0.22 per share, and adjusted diluted EPS of $11.51 increased 12%, or $1.26 per share. A summary table of changes in diluted EPS is presented below.

Changes in Diluted EPS Attributable to Air Products

The per share impacts presented in the table below were calculated independently and may not sum to the total change in diluted EPS due to rounding.

Fiscal Year Ended 30 September	**2023**	2022	Increase (Decrease)
Total Diluted EPS	**$10.33**	$10.14	$0.19
Less: Diluted EPS from income from discontinued operations	**0.03**	0.06	(0.03)
Diluted EPS From Continuing Operations	**$10.30**	$10.08	$0.22
% Change from prior year			2 %
Operating Impacts			
Underlying business			
Volume			$0.22
Price, net of variable costs			2.39
Other costs			(1.11)
Currency			(0.29)
Business and asset actions			(0.65)
Total Operating Impacts			$0.56
Other Impacts			
Equity affiliates' income			$0.40
Equity method investment impairment charge			0.05
Interest expense			(0.18)
Other non-operating income/expense, net, excluding discrete item below			0.11
Non-service pension cost/benefit, net			(0.44)
Change in effective tax rate			(0.12)
Noncontrolling interests			(0.15)
Weighted average diluted shares			(0.01)
Total Other Impacts			($0.34)
Total Change in Diluted EPS From Continuing Operations			$0.22
% Change from prior year			2 %

The table below summarizes the diluted per share impact of our non-GAAP adjustments in fiscal years 2023 and 2022:

Fiscal Year Ended 30 September	**2023**	2022	Increase (Decrease)
Diluted EPS From Continuing Operations	**$10.30**	$10.08	$0.22
Business and asset actions	**0.92**	0.27	0.65
Equity method investment impairment charge	**—**	0.05	(0.05)
Non-service pension cost (benefit), net	**0.29**	(0.15)	0.44
Adjusted Diluted EPS From Continuing Operations	**$11.51**	$10.25	$1.26
% Change from prior year			12 %

OUTLOOK

The guidance below should be read in conjunction with the *Forward-Looking Statements* of this Annual Report on Form 10-K.

The first pillar of our two-pillar growth strategy is our core industrial gas business, which is supported by a consistent stream of revenue due to the structure of our on-site contracts. We expect new on-site projects, including the natural gas-to-syngas processing facility in Uzbekistan, as well as several new LNG sale of equipment projects to contribute to our results in 2024. To mitigate the impact of ongoing inflationary pressures, we are focused on actions we can control, such as maintaining pricing discipline in our merchant business. Additionally, we expect to see cost improvement in certain areas of our organization as a result of strategic business actions taken earlier in 2023.

The second pillar of our strategy is our blue and green hydrogen projects, many of which are already under execution. We anticipate benefits from tax incentives created by the U.S. Inflation Reduction Act of 2022 for carbon sequestration and clean hydrogen production in future years once our projects in these areas come on-stream, such as our blue hydrogen and blue ammonia clean energy complex in Louisiana. We are also gaining support from foreign regulators for our projects outside the U.S., including the recently announced blue hydrogen project in the Netherlands. We believe the infrastructure readiness we are preparing now will continue to be a competitive advantage for Air Products, allowing us to create sustainable growth opportunities that deliver value to our shareholders, customers, employees, and communities around the world.

RESULTS OF OPERATIONS

DISCUSSION OF CONSOLIDATED RESULTS

			Change vs. Prior Year	
Fiscal Year Ended 30 September	**2023**	2022	$	%/bp
GAAP Measures				
Sales	**$12,600.0**	$12,698.6	($98.6)	(1 %)
Operating income	**2,494.6**	2,338.8	155.8	7 %
Operating margin	**19.8 %**	18.4 %		140 bp
Equity affiliates' income	**$604.3**	$481.5	$122.8	26 %
Net income	**2,338.6**	2,266.5	72.1	3 %
Net income margin	**18.6 %**	17.8 %		80 bp
Non-GAAP Measures				
Adjusted EBITDA	**$4,701.8**	$4,247.0	$454.8	11 %
Adjusted EBITDA margin	**37.3 %**	33.4 %		390 bp

Sales

The table below summarizes the major factors that impacted consolidated sales for the periods presented:

Volume	3 %
Price	5 %
Energy cost pass-through to customers	(6 %)
Currency	(3 %)
Total Consolidated Sales Change	**(1 %)**

Sales of $12.6 billion decreased 1%, or $98.6, as lower energy cost pass-through to customers of 6% and unfavorable currency of 3% were mostly offset by higher pricing of 5% and higher volumes of 3%. Lower natural gas prices in the Americas and Europe segments drove the lower energy cost pass-through to our on-site customers. Unfavorable currency was primarily attributable to strengthening of the U.S. Dollar against the Chinese Renminbi. Pricing actions in our merchant business improved sales across each of our regional segments, while the volume improvement was primarily attributable to our on-site business in the Americas and Asia segments.

Cost of Sales and Gross Margin

Cost of sales of $8.8 billion decreased 5%, or $505.5, due to lower energy cost pass-through to customers of $791 and a favorable impact from currency of $213, partially offset by higher costs associated with sales volumes of $311 and unfavorable other costs of $188. The unfavorable costs were driven by inflation, project development activities, and planned maintenance. Gross margin of 29.9% increased 340 bp from 26.5% in the prior year primarily due to favorable pricing and lower energy cost pass-through to customers, partially offset by the impact of higher costs. The favorable impact from lower energy cost pass-through to customers was about 200 bp.

Selling and Administrative Expense

Selling and administrative expense of $957.0 increased 6%, or $56.4, primarily due to higher employee compensation, inflation, and additional costs to support growth, partially offset by a favorable impact from currency. Selling and administrative expense as a percentage of sales increased to 7.6% from 7.1% in the prior year.

Research and Development Expense

Research and development expense of $105.6 increased 3%, or $2.7. Research and development expense as a percentage of sales of 0.8% was flat versus the prior year.

Business and Asset Actions

In fiscal year 2023, we recorded a charge of $244.6 ($204.9 attributable to Air Products after tax, or $0.92 per share) for strategic actions intended to optimize costs and focus resources on our growth projects. Of the expense, $217.6 resulted from noncash charges to write off assets associated with exited projects that were previously under construction. The remaining expense included $27.0 for severance and other benefits associated with position eliminations and restructuring of certain organizations globally. Refer to Note 4, *Business and Asset Actions*, for additional information.

In fiscal year 2022, we divested our small industrial gas business in Russia due to Russia's invasion of Ukraine. As a result, we recorded a noncash charge of $73.7 ($61.0 after tax, or $0.27 per share), which included transaction costs and cumulative currency translation losses.

Other Income (Expense), Net

Other income of $34.8 decreased 38%, or $21.1, primarily due to lower income from the sale of assets and fees charged to our equity affiliates for use of patents and technology as well as an unfavorable foreign exchange impact.

Operating Income and Margin

Operating income of $2.5 billion increased 7%, or $155.8. Positive pricing, net of power and fuel costs, of $649 and higher volumes of $58 were partially offset by higher costs of $302 and an unfavorable currency impact of $78. The higher costs were driven by inflation, planned maintenance, and incentive compensation, as well as project development and other costs related to the execution of our growth strategy. Additionally, as discussed above, we recorded higher charges for business and asset actions in fiscal year 2023 compared to fiscal year 2022. Operating margin of 19.8% increased 140 bp from 18.4% in the prior year, primarily due to the impact of pricing as well as lower energy cost pass-through to customers, which positively impacted margin by about 100 basis points, partially offset by higher charges for business and asset actions and higher other costs.

Equity Affiliates’ Income

Equity affiliates' income of $604.3 increased 26%, or $122.8, primarily due to a higher contribution from the JIGPC joint venture, which completed the second phase of the asset purchase associated with the Jazan gasification and power project in January 2023, as well as higher income from our affiliates in Italy and Mexico. Additionally, the prior year included an impairment charge of $14.8 ($11.1 after tax, or $0.05 per share) related to two small affiliates in the Asia segment. These impacts were partially offset by the prior year recognition of the remaining deferred profit associated with air separation units previously sold to Jazan Gas Project Company, net of other project finalization costs.

For additional information on our equity affiliates, refer to Note 9, *Equity Affiliates*, to the consolidated financial statements.

Interest Expense

Fiscal Year Ended 30 September	**2023**	2022
Interest incurred	**$292.9**	$169.0
Less: Capitalized interest	**115.4**	41.0
Interest expense	**$177.5**	$128.0

Interest incurred increased 73%, or $123.9, driven by a higher average interest rate on variable-rate instruments in our debt portfolio as well as a higher debt balance, which is largely attributable to the U.S. Dollar- and Euro-denominated fixed-rate notes issued in March 2023 under our new Green Finance Framework as well as borrowings on our foreign credit facilities. Capitalized interest increased $74.4 due to a higher carrying value of projects under construction.

Other Non-Operating Income (Expense), Net

Other non-operating expense was $39.0 versus income of $62.4 in the prior year primarily due to higher non-service pension costs in 2023, which were driven by higher interest cost and lower expected returns on plan assets for the U.S. salaried pension plan and the U.K. pension plan. This impact was partially offset by higher interest income on cash and cash items due to higher interest rates.

Discontinued Operations

Income from discontinued operations, net of tax, was $7.4 ($0.03 per share) and $12.6 ($0.06 per share) in fiscal years 2023 and 2022, respectively. This primarily resulted from the release of unrecognized tax benefits on uncertain tax positions taken with respect to the sale of our former Performance Materials Division for which the statute of limitations expired.

Net Income and Net Income Margin

Net income of $2.3 billion increased 3%, or $72.1, primarily due to favorable pricing, net of power and fuel costs, partially offset by the charge for business and asset actions, higher non-service pension costs, and higher other costs. Net income margin of 18.6% increased 80 bp from 17.8% in the prior year due to the factors noted above as well as lower energy cost pass-through to customers, which positively impacted margin by about 100 bp.

Adjusted EBITDA and Adjusted EBITDA Margin

Adjusted EBITDA of $4.7 billion increased 11%, or $454.8, primarily due to higher pricing, net of power and fuel costs, partially offset by higher costs. Adjusted EBITDA margin of 37.3% increased 390 bp from 33.4% in the prior year due to the factors noted above as well as lower energy cost pass-through to customers, which positively impacted margin by about 200 bp.

Effective Tax Rate

The effective tax rate equals the income tax provision divided by income from continuing operations before taxes. Refer to Note 23, *Income Taxes*, to the consolidated financial statements for details on factors affecting the effective tax rate.

Our effective tax rate was 19.1% and 18.2% for the fiscal years ended 30 September 2023 and 2022, respectively. During fiscal year 2023, we recorded a charge for business and asset actions of $244.6 ($204.9 attributable to Air Products after tax). Refer to Note 4, *Business and Asset Actions*, to the consolidated financial statements for additional information. The charge included certain losses for which we could not recognize an income tax benefit and were subject to a valuation allowance of $36.0. Partially offsetting the valuation allowance cost was a $15.9 income tax benefit from a tax election related to a non-U.S. subsidiary.

Our effective tax rate for the current year was higher due to lower excess tax benefits on share-based compensation and the discrete tax impact of our business and asset actions discussed above. In addition, certain recurring income tax benefits had less of an impact on our effective tax rate in the current year as they did not increase in proportion to the increase in income. Our current rate is also higher due to nonrecurring benefits in several foreign jurisdictions due to the impact of tax rate changes and productivity credit claims in the prior year.

Our adjusted effective tax rate, which does not include the impact of our business and asset actions discussed above, was 18.9% and 18.1% for the fiscal years ended 30 September 2023 and 2022, respectively.

DISCUSSION OF RESULTS BY BUSINESS SEGMENT

Americas

			Change vs. Prior Year	
Fiscal Year Ended 30 September	**2023**	2022	$	%/bp
Sales	**$5,369.3**	$5,368.9	$0.4	—%
Operating income	**1,439.7**	1,174.4	265.3	23%
Operating margin	**26.8 %**	21.9 %		490 bp
Equity affiliates' income	**$109.2**	$98.2	$11.0	11%
Adjusted EBITDA	**2,198.2**	1,902.1	296.1	16%
Adjusted EBITDA margin	**40.9 %**	35.4 %		550 bp

The table below summarizes the major factors that impacted sales in the Americas segment for the periods presented:

Volume	6 %
Price	6 %
Energy cost pass-through to customers	(11 %)
Currency	(1 %)
Total Americas Sales Change	**— %**

Sales of $5.4 billion were flat as higher volumes of 6% and higher pricing of 6% were offset by lower energy cost pass-through to customers of 11% and an unfavorable currency impact of 1%. The volume improvement was primarily attributable to our on-site business, including better demand for hydrogen. Additionally, we recovered higher costs in our merchant business through continued focus on pricing actions. Energy cost pass-through to our on-site customers was lower due to lower natural gas prices.

Operating income of $1.4 billion increased 23%, or $265.3, due to positive pricing, net of power and fuel costs, of $306 and favorable volumes of $78, partially offset by higher costs of $112 and an unfavorable currency impact of $7. Higher costs were driven by inflation, planned maintenance, and higher incentive compensation. Operating margin of 26.8% increased 490 bp from 21.9% in the prior year primarily due to favorable pricing and lower energy cost pass-through to customers, partially offset by higher costs. The favorable impact from lower energy cost pass-through to customers was about 250 bp.

Equity affiliates' income of $109.2 increased 11%, or $11.0, driven by an affiliate in Mexico.

Asia

Fiscal Year Ended 30 September	**2023**	2022	Change vs. Prior Year $	%/bp
Sales	**$3,216.1**	$3,143.3	$72.8	2%
Operating income	**906.5**	898.3	8.2	1%
Operating margin	**28.2 %**	28.6 %		(40 bp)
Equity affiliates' income	**$29.7**	$22.1	$7.6	34%
Adjusted EBITDA	**1,369.7**	1,356.9	12.8	1%
Adjusted EBITDA margin	**42.6 %**	43.2 %		(60 bp)

The table below summarizes the major factors that impacted sales in the Asia segment for the periods presented:

Volume	3 %
Price	3 %
Energy cost pass-through to customers	2 %
Currency	(6 %)
Total Asia Sales Change	**2 %**

Sales of $3.2 billion increased 2%, or $72.8, due to higher volumes of 3%, positive pricing of 3%, and higher energy cost pass-through to customers of 2%, partially offset by unfavorable currency impacts of 6%. Positive volume contributions from several new traditional industrial gas plants in our on-site business were partially offset by weak economic growth in China and lower activity in the electronics manufacturing industry. Higher power costs across the region were recovered by our merchant pricing actions. In our on-site business, the higher power costs increased energy cost pass-through to our customers. The unfavorable currency impact was primarily attributable to the strengthening of the U.S. Dollar against the Chinese Renminbi.

Operating income of $906.5 increased 1%, or $8.2, due to positive pricing, net of power and fuel costs, of $59 and higher volumes of $31, partially offset by an unfavorable currency impact of $56 and higher costs of $26. The higher costs were driven by project development, higher planned maintenance, and inflation. Operating margin of 28.2% decreased 40 bp from 28.6% in the prior year as higher costs were partially offset by our pricing actions.

Equity affiliates' income of $29.7 increased 34%, or $7.6, driven by an affiliate in Thailand.

Europe

			Change vs. Prior Year	
Fiscal Year Ended 30 September	**2023**	2022	$	%/bp
Sales	**$2,963.1**	$3,086.1	($123.0)	(4%)
Operating income	**663.4**	503.4	160.0	32%
Operating margin	**22.4 %**	16.3 %		610 bp
Equity affiliates' income	**$102.5**	$78.2	$24.3	31%
Adjusted EBITDA	**962.1**	776.8	185.3	24%
Adjusted EBITDA margin	**32.5 %**	25.2 %		730 bp

The table below summarizes the major factors that impacted sales in the Europe segment for the periods presented:

Volume	— %
Price	7 %
Energy cost pass-through to customers	(9 %)
Currency	(2 %)
Total Europe Sales Change	**(4 %)**

Sales of $3.0 billion decreased 4%, or $123.0, due to lower energy cost pass-through to customers of 9% and an unfavorable currency impact of 2%, partially offset by higher pricing of 7%. Energy cost pass-through to our on-site customers was lower, reflecting lower natural gas prices across the region. Currency negatively impacted sales due to the strengthening of the U.S. Dollar against the Euro and the British Pound Sterling. The pricing improvement was attributable to our merchant business. Volumes were flat as improvement in hydrogen in our on-site business was offset by lower demand for merchant products.

Operating income of $663.4 increased 32%, or $160.0, as higher pricing, net of power and fuel costs, of $275 was partially offset by higher costs of $100 driven by inflation, higher incentive compensation, and planned maintenance, unfavorable business mix of $8, and an unfavorable currency impact of $7. Operating margin of 22.4% increased 610 bp from 16.3% in the prior year due to the factors noted above as well as lower energy cost pass-through to customers, which positively impacted margin by about 100 bp.

Equity affiliates' income of $102.5 increased 31%, or $24.3, driven by an affiliate in Italy.

Middle East and India

Fiscal Year Ended 30 September	2023	2022	Change vs. Prior Year $	%
Sales	**$162.5**	$129.5	$33.0	25 %
Operating income	**16.9**	21.1	(4.2)	(20 %)
Equity affiliates’ income	**349.8**	293.9	55.9	19 %
Adjusted EBITDA	**394.2**	341.9	52.3	15 %

Sales of $162.5 increased 25%, or $33.0, driven by higher merchant volumes. Despite higher sales, operating income of $16.9 decreased 20%, or $4.2, primarily due to higher costs for business development and planned maintenance.

Equity affiliates' income of $349.8 increased 19%, or $55.9. In January 2023, we made an additional investment in the JIGPC joint venture, which completed the second phase of the asset purchase associated with the Jazan gasification and power project. The resulting higher contribution from JIGPC was partially offset by a prior year net benefit recognized for the remaining deferred profit associated with air separation units previously sold to Jazan Gas Project Company, net of other project finalization costs.

Corporate and other

Fiscal Year Ended 30 September	2023	2022	Change vs. Prior Year $	%
Sales	**$889.0**	$970.8	($81.8)	(8 %)
Operating loss	**(287.3)**	(184.7)	(102.6)	(56 %)
Adjusted EBITDA	**(222.4)**	(130.7)	(91.7)	(70 %)

Sales of $889.0 decreased 8%, or $81.8, and operating loss of $287.3 increased $102.6, primarily due to lower contributions from our sale of equipment businesses. Our Corporate and other segment also incurs costs to provide corporate support functions and global management activities that benefit all segments, which have increased to support our growth strategy.

RECONCILIATIONS OF NON-GAAP FINANCIAL MEASURES

(Millions of U.S. Dollars unless otherwise indicated, except for per share data)

We present certain financial measures, other than in accordance with U.S. generally accepted accounting principles ("GAAP"), on an "adjusted" or "non-GAAP" basis. On a consolidated basis, these measures include adjusted diluted earnings per share ("EPS"), adjusted EBITDA, adjusted EBITDA margin, the adjusted effective tax rate, and capital expenditures. On a segment basis, these measures include adjusted EBITDA and adjusted EBITDA margin. In addition to these measures, we also present certain supplemental non-GAAP financial measures to help the reader understand the impact that certain disclosed items, or "non-GAAP adjustments," have on the calculation of our adjusted diluted EPS. For each non-GAAP financial measure, we present a reconciliation to the most directly comparable financial measure calculated in accordance with GAAP.

In many cases, non-GAAP financial measures are determined by adjusting the most directly comparable GAAP measure to exclude non-GAAP adjustments that we believe are not representative of our underlying business performance. For example, we exclude the impact of the non-service components of net periodic benefit/cost for our defined benefit pension plans as further discussed below. Additionally, we may exclude certain expenses associated with cost reduction actions, impairment charges, and gains on disclosed transactions. The reader should be aware that we may recognize similar losses or gains in the future.

When applicable, the tax impact of our pre-tax non-GAAP adjustments reflects the expected current and deferred income tax impact of our non-GAAP adjustments. 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.

We provide these non-GAAP financial measures to allow investors, potential investors, securities analysts, and others to evaluate the performance of our business in the same manner as our management. We believe these measures, when viewed together with 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. However, we caution readers not to consider these measures in isolation or as a substitute for the most directly comparable measures calculated in accordance with GAAP. Readers should also consider the limitations associated with these non-GAAP financial measures, including the potential lack of comparability of these measures from one company to another.

NON-GAAP ADJUSTMENT FOR NON-SERVICE PENSION COST (BENEFIT), NET

Our adjusted EPS and the adjusted effective tax rate exclude the impact of non-service related components of net periodic benefit/cost for our defined benefit pension plans. The prior year non-GAAP financial measures presented above and reconciled below have been recast accordingly to conform to the fiscal year 2023 presentation. Non-service related components are recurring, non-operating items that include interest cost, expected returns on plan assets, prior service cost amortization, actuarial loss amortization, as well as special termination benefits, curtailments, and settlements. The net impact of non-service related components is reflected within “Other non-operating income (expense), net” on our consolidated income statements. Adjusting for the impact of non-service pension components provides management and users of our financial statements with a more accurate representation of our underlying business performance because these components are driven by factors that are unrelated to our operations, such as recent changes to the allocation of our pension plan assets associated with de-risking as well as volatility in equity and debt markets. Further, non-service related components are not indicative of our defined benefit plans’ future contribution needs due to the funded status of the plans.

ADJUSTED DILUTED EPS

The table below provides a reconciliation to the most directly comparable GAAP measure for each of the major components used to calculate adjusted diluted EPS from continuing operations, which we view as a key performance metric. In periods that we have non-GAAP adjustments, we believe it is important for the reader to understand the per share impact of each such adjustment because management does not consider these impacts when evaluating underlying business performance. Per share impacts are calculated independently and may not sum to total diluted EPS and total adjusted diluted EPS due to rounding.

2023 vs. 2022	Operating Income	Equity Affiliates' Income	Other Non-Operating Income/Expense, Net	Income Tax Provision	Net Income Attributable to Air Products	Diluted EPS
2023 GAAP	**$2,494.6**	**$604.3**	**($39.0)**	**$551.2**	**$2,292.8**	**$10.30**
2022 GAAP	**2,338.8**	**481.5**	**62.4**	**500.8**	**2,243.5**	**10.08**
$ Change GAAP						$0.22
% Change GAAP						2 %
2023 GAAP	$2,494.6	$604.3	($39.0)	$551.2	$2,292.8	$10.30
Business and asset actions[(A)]	244.6	—	—	34.7	204.9	0.92
Non-service pension cost, net	—	—	86.8	21.6	65.2	0.29
2023 Non-GAAP ("Adjusted")	**$2,739.2**	**$604.3**	**$47.8**	**$607.5**	**$2,562.9**	**$11.51**
2022 GAAP	$2,338.8	$481.5	$62.4	$500.8	$2,243.5	$10.08
Business and asset actions	73.7	—	—	12.7	61.0	0.27
Equity method investment impairment charge	—	14.8	—	3.7	11.1	0.05
Non-service pension benefit, net	—	—	(44.7)	(10.8)	(33.9)	(0.15)
2022 Non-GAAP ("Adjusted")	**$2,412.5**	**$496.3**	**$17.7**	**$506.4**	**$2,281.7**	**$10.25**
$ Change Non-GAAP ("Adjusted")						$1.26
% Change Non-GAAP ("Adjusted")						12 %

[(A)] Charge includes $5.0 attributable to noncontrolling interests.

ADJUSTED EBITDA AND ADJUSTED EBITDA MARGIN

We define adjusted EBITDA as net income less income from discontinued operations, net of tax, and excluding non-GAAP adjustments, which we do 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 and adjusted EBITDA margin provide useful metrics for management to assess operating performance. Margins are calculated independently for each period by dividing each line item by consolidated sales for the respective period and may not sum to total margin due to rounding.

The tables below present consolidated sales and a reconciliation of net income on a GAAP basis to adjusted EBITDA and net income margin on a GAAP basis to adjusted EBITDA margin:

	2023		2022	
	$	**Margin**	$	Margin
Sales	**$12,600.0**		$12,698.6	
Net income and net income margin	**$2,338.6**	**18.6 %**	$2,266.5	17.8 %
Less: Income from discontinued operations, net of tax	**7.4**	**0.1 %**	12.6	0.1 %
Add: Interest expense	**177.5**	**1.4 %**	128.0	1.0 %
Less: Other non-operating income (expense), net	**(39.0)**	**(0.3 %)**	62.4	0.5 %
Add: Income tax provision	**551.2**	**4.4 %**	500.8	3.9 %
Add: Depreciation and amortization	**1,358.3**	**10.8 %**	1,338.2	10.5 %
Add: Business and asset actions	**244.6**	**1.9 %**	73.7	0.6 %
Add: Equity method investment impairment charge	**—**	**— %**	14.8	0.1 %
Adjusted EBITDA and adjusted EBITDA margin	**$4,701.8**	**37.3 %**	$4,247.0	33.4 %

	2023 vs. 2022
Change GAAP	
Net income $ change	**$72.1**
Net income % change	**3%**
Net income margin change	**80 bp**
Change Non-GAAP	
Adjusted EBITDA $ change	**$454.8**
Adjusted EBITDA % change	**11%**
Adjusted EBITDA margin change	**390 bp**

The tables below present sales and a reconciliation of operating income and operating margin by segment to adjusted EBITDA and adjusted EBITDA margin by segment for the fiscal years ended 30 September 2023 and 2022:

Americas

			Change vs. Prior Year	
Fiscal Year Ended 30 September	**2023**	2022	$	%/bp
Sales	**$5,369.3**	$5,368.9	$0.4	— %
Operating income	**$1,439.7**	$1,174.4	$265.3	23 %
Operating margin	**26.8 %**	21.9 %		490 bp
Reconciliation of GAAP to Non-GAAP:				
Operating income	**$1,439.7**	$1,174.4		
Add: Depreciation and amortization	**649.3**	629.5		
Add: Equity affiliates' income	**109.2**	98.2		
Adjusted EBITDA	**$2,198.2**	$1,902.1	$296.1	16 %
Adjusted EBITDA margin	**40.9 %**	35.4 %		550 bp

Asia

			Change vs. Prior Year	
Fiscal Year Ended 30 September	**2023**	2022	$	%/bp
Sales	**$3,216.1**	$3,143.3	$72.8	2 %
Operating income	**$906.5**	$898.3	$8.2	1 %
Operating margin	**28.2 %**	28.6 %		(40) bp
Reconciliation of GAAP to Non-GAAP:				
Operating income	**$906.5**	$898.3		
Add: Depreciation and amortization	**433.5**	436.5		
Add: Equity affiliates' income	**29.7**	22.1		
Adjusted EBITDA	**$1,369.7**	$1,356.9	$12.8	1 %
Adjusted EBITDA margin	**42.6 %**	43.2 %		(60) bp

Europe

			Change vs. Prior Year	
Fiscal Year Ended 30 September	**2023**	2022	$	%/bp
Sales	**$2,963.1**	$3,086.1	($123.0)	(4 %)
Operating income	**$663.4**	$503.4	$160.0	32 %
Operating margin	**22.4 %**	16.3 %		610 bp
Reconciliation of GAAP to Non-GAAP:				
Operating income	**$663.4**	$503.4		
Add: Depreciation and amortization	**196.2**	195.2		
Add: Equity affiliates' income	**102.5**	78.2		
Adjusted EBITDA	**$962.1**	$776.8	$185.3	24 %
Adjusted EBITDA margin	**32.5 %**	25.2 %		730 bp

Middle East and India

Fiscal Year Ended 30 September	**2023**	2022	Change vs. Prior Year $	Change vs. Prior Year %/bp
Sales	**$162.5**	$129.5	$33.0	25 %
Operating income	**$16.9**	$21.1	($4.2)	(20 %)
Reconciliation of GAAP to Non-GAAP:				
Operating income	**$16.9**	$21.1		
Add: Depreciation and amortization	**27.5**	26.9		
Add: Equity affiliates' income	**349.8**	293.9		
Adjusted EBITDA	**$394.2**	$341.9	$52.3	15 %

Corporate and other

Fiscal Year Ended 30 September	**2023**	2022	Change vs. Prior Year $	Change vs. Prior Year %/bp
Sales	**$889.0**	$970.8	($81.8)	(8 %)
Operating loss	**($287.3)**	($184.7)	($102.6)	(56 %)
Reconciliation of GAAP to Non-GAAP:				
Operating loss	**($287.3)**	($184.7)		
Add: Depreciation and amortization	**51.8**	50.1		
Add: Equity affiliates' income	**13.1**	3.9		
Adjusted EBITDA	**($222.4)**	($130.7)	($91.7)	(70 %)

ADJUSTED EFFECTIVE TAX RATE

The effective tax rate equals the income tax provision divided by income from continuing operations before taxes. We calculate our adjusted effective tax rate by adjusting the numerator and denominator to exclude the tax and before tax impacts of our non-GAAP adjustments, respectively. The table below presents a reconciliation of the GAAP effective tax rate to our adjusted effective tax rate:

Fiscal Year Ended 30 September	**2023**	2022
Income tax provision	**$551.2**	$500.8
Income from continuing operations before taxes	**2,882.4**	2,754.7
Effective tax rate	**19.1 %**	18.2 %
Income tax provision	**$551.2**	$500.8
Business and asset actions	**34.7**	12.7
Equity method investment impairment charge	**—**	3.7
Non-service pension tax impact	**21.6**	(10.8)
Adjusted income tax provision	**$607.5**	$506.4
Income from continuing operations before taxes	**$2,882.4**	$2,754.7
Business and asset actions	**244.6**	73.7
Equity method investment impairment charge	—	14.8
Non-service pension cost (benefit), net	**86.8**	(44.7)
Adjusted income from continuing operations before taxes	**$3,213.8**	$2,798.5
Adjusted effective tax rate	**18.9 %**	18.1 %

CAPITAL EXPENDITURES

Capital expenditures is a non-GAAP financial measure that we define as the sum of cash flows for additions to plant and equipment, including long-term deposits, acquisitions (less cash acquired), investment in and advances to unconsolidated affiliates, and investment in financing receivables on our consolidated statements of cash flows. Additionally, we adjust additions to plant and equipment to exclude NEOM Green Hydrogen Company (“NGHC”) expenditures funded by the joint venture's non-recourse project financing as well as our partners’ equity contributions to arrive at a measure that we believe is more representative of our investment activities. Substantially all the funding we provide to NGHC is limited for use by the venture for capital expenditures.

A reconciliation of cash used for investing activities to our reported capital expenditures is provided below:

Fiscal Year Ended 30 September	**2023**	2022
Cash used for investing activities	**$5,916.4**	$3,857.2
Proceeds from sale of assets and investments	**25.4**	46.2
Purchases of investments	**(640.1)**	(1,637.8)
Proceeds from investments	**897.0**	2,377.4
Other investing activities	**4.8**	7.0
NGHC expenditures not funded by Air Products' equity[(A)]	**(979.1)**	—
Capital expenditures	**$5,224.4**	$4,650.0

[(A)] Reflects the portion of "Additions to plant and equipment, including long-term deposits" that is associated with NGHC, less our approximate cash investment in the joint venture.

LIQUIDITY AND CAPITAL RESOURCES

We believe we have sufficient cash, cash flows from operations, and funding sources to meet our liquidity needs. As further discussed in the "Cash Flows From Financing Activities" section below, we have the ability to raise capital through a variety of financing activities, including accessing capital or commercial paper markets or drawing upon our credit facilities.

As of 30 September 2023, we had $1,497.1 of foreign cash and cash items compared to total cash and cash items of $1,617.0. We 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 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.

Cash Flows From Operations

Fiscal Year Ended 30 September	**2023**	2022
Net income from continuing operations attributable to Air Products	**$2,292.8**	$2,243.5
Adjustments to reconcile income to cash provided by operating activities:		
Depreciation and amortization	**1,358.3**	1,338.2
Deferred income taxes	**(24.7)**	32.3
Business and asset actions	**244.6**	73.7
Undistributed earnings of equity method investments	**(261.2)**	(214.7)
Gain on sale of assets and investments	**(15.8)**	(24.1)
Share-based compensation	**59.9**	48.4
Noncurrent lease receivables	**79.6**	94.0
Other adjustments	**(103.0)**	(304.9)
Working capital changes that provided (used) cash, excluding effects of acquisitions:		
Trade receivables	**130.7**	(475.2)
Inventories	**(129.4)**	(94.3)
Other receivables	**(93.8)**	(1.8)
Payables and accrued liabilities	**(213.3)**	532.5
Other working capital	**(119.0)**	(77.0)
Cash Provided by Operating Activities	**$3,205.7**	$3,170.6

In fiscal year 2023, cash provided by operating activities was $3,205.7. Business and asset actions of $244.6 included noncash charges to write off assets related to our exit from certain projects previously under construction as well as an expense for severance and other benefits. Refer to Note 4, *Business and Asset Actions*, to the consolidated financial statements for additional information. The impacts associated with our operating leases are reflected within "Other adjustments," which included a lump-sum payment of $209 for a land lease associated with the NGHC joint venture. Working capital accounts resulted in a net use of cash of $424.8. The use of cash of $213.3 within payables and accrued liabilities primarily resulted from lower prices for the purchase of natural gas, a decrease in value of derivatives that hedge intercompany loans, and payments for incentive compensation under the fiscal year 2022 plan. Inventories resulted in a use of cash of $129.4 primarily due to additional packaged gases inventory, including helium. The use of cash of $119.0 within other working capital was primarily driven by the timing of income tax payments. The source of cash of $130.7 from trade receivables was primarily attributable to collection of higher natural gas costs contractually passed through to on-site customers in fiscal year 2023.

In fiscal year 2022, cash provided by operating activities was $3,170.6. Undistributed earnings of equity method investments of $214.7 reflects activity from the JIGPC joint venture, which began contributing to our results in late October 2021. We received cash distributions of approximately $155 from this joint venture during fiscal year 2022. Other adjustments of $304.9 included adjustments for noncash currency impacts of intercompany balances, deferred costs associated with new projects, contributions to pension plans, and payments made for leasing activities. Working capital accounts resulted in a net use of cash of $115.8. The use of cash of $475.2 within trade receivables included the impacts of higher underlying sales and higher natural gas costs passed through to our on-site customers. The source of cash of $532.5 within payables and accrued liabilities primarily resulted from higher natural gas costs and customer advances for sale of equipment projects. Other working capital accounts resulted in a use of cash of $77.0 primarily due to contract fulfillment costs and the timing of income tax payments.

Cash Flows From Investing Activities

Fiscal Year Ended 30 September	**2023**	2022
Additions to plant and equipment, including long-term deposits	**($4,626.4)**	($2,926.5)
Acquisitions, less cash acquired	**—**	(65.1)
Investment in and advances to unconsolidated affiliates	**(912.0)**	(1,658.4)
Investment in financing receivables	**(665.1)**	—
Proceeds from sale of assets and investments	**25.4**	46.2
Purchases of investments	**(640.1)**	(1,637.8)
Proceeds from investments	**897.0**	2,377.4
Other investing activities	**4.8**	7.0
Cash Used for Investing Activities	**($5,916.4)**	($3,857.2)

In fiscal year 2023, cash used for investing activities was $5,916.4. The use of cash primarily resulted from capital expenditures of $4,626.4 for additions to plant and equipment, including long-term deposits, investments in and advances to unconsolidated affiliates of $912.0, and investments in financing receivables of $665.1. Refer to the *Capital Expenditures* section below for further detail. Maturities of time deposits and short-term treasury securities provided cash of $897.0, which exceeded purchases of investments of $640.1.

In fiscal year 2022, cash used for investing activities was $3,857.2. Capital expenditures primarily included $2,926.5 for additions to plant and equipment, including long-term deposits, and $1,658.4 for investments in and advances to unconsolidated affiliates. Proceeds from investments of $2,377.4 resulted from maturities of time deposits and short-term treasury securities and exceeded purchases of investments of $1,637.8.

Capital Expenditures

The components of our capital expenditures are detailed in the table below. Refer to page 38 for a definition of this non-GAAP measure as well as a reconciliation to cash used for investing activities.

Fiscal Year Ended 30 September	**2023**	2022
Additions to plant and equipment, including long-term deposits	**$4,626.4**	$2,926.5
Acquisitions, less cash acquired	**—**	65.1
Investment in and advances to unconsolidated affiliates[A]	**912.0**	1,658.4
Investment in financing receivables	**665.1**	—
NGHC expenditures not funded by Air Products' equity[B]	**(979.1)**	—
Capital Expenditures	**$5,224.4**	$4,650.0

[A] Includes contributions from noncontrolling partners in consolidated subsidiaries as discussed below.

[B] Reflects the portion of "Additions to plant and equipment, including long-term deposits" that is associated with NGHC, less our approximate cash investment in the joint venture.

Capital expenditures in fiscal year 2023 totaled $5,224.4 compared to $4,650.0 in fiscal year 2022. The increase of $574.4 was driven by spending for plant and equipment, which was largely attributable to purchases associated with our low- and zero-carbon hydrogen projects, as well as ongoing maintenance capital spending. Higher spending for plant and equipment was partially offset by lower investments in and advances to unconsolidated affiliates, as the second phase of our investment in JIGPC of $908 in fiscal year 2023 was lower than the initial investment of $1.6 billion completed in fiscal year 2022. These investments included approximately $130 and $73 in fiscal years 2023 and 2022, respectively, received from a noncontrolling partner in one of our subsidiaries. We expect to complete a remaining investment of approximately $115. Refer to Note 9, *Equity Affiliates*, to the consolidated financial statements for additional information. Fiscal year 2023 also included an investment in financing receivables of $665.1, primarily for progress payments towards the purchase of a natural gas-to-syngas processing facility in Uzbekistan. Refer to Note 5, *Acquisitions*, to the consolidated financial statements for additional information.

Outlook for Investing Activities

It is not possible, without unreasonable efforts, to reconcile our forecasted capital expenditures to future cash used for investing activities because we are unable to identify the timing or occurrence of our future investment activity, which is driven by our assessment of competing opportunities at the time we enter into transactions. These decisions, either individually or in the aggregate, could have a significant effect on our cash used for investing activities.

We expect capital expenditures for fiscal year 2024 to be approximately $5.0 billion to $5.5 billion, which is driven by clean hydrogen and sustainable aviation fuel projects such as those being executed in California and Louisiana, United States, as well as Alberta, Canada. We anticipate capital expenditures to be funded with our current cash balance, cash generated from continuing operations, and additional financing activities.

As of the end of fiscal year 2023, we have committed capital of approximately $15 billion to projects intended to accelerate the energy transition. These low- and zero-carbon hydrogen and other first mover projects demonstrate our commitment to making investments that will make a meaningful difference on climate issues, allowing us to support our customers’ sustainability journeys, conserve resources, and care for our employees and communities.

Cash Flows From Financing Activities

Fiscal Year Ended 30 September	**2023**	2022
Long-term debt proceeds	**$3,516.2**	$766.2
Payments on long-term debt	**(615.4)**	(400.0)
Net increase in commercial paper and short-term borrowings	**268.2**	17.9
Dividends paid to shareholders	**(1,496.6)**	(1,383.3)
Proceeds from stock option exercises	**24.0**	19.3
Investments by noncontrolling interests	**234.9**	21.0
Distributions to noncontrolling interests	**(115.9)**	(4.8)
Other financing activities	**(205.8)**	(36.9)
Cash Provided by (Used for) Financing Activities	**$1,609.6**	($1,000.6)

In fiscal year 2023, cash provided by financing activities was $1,609.6. As further discussed below, the source of cash was primarily attributable to long-term debt proceeds of $3,516.2 as well as an increase in commercial paper and short-term borrowings of $268.2. These cash inflows were partially offset by dividend payments to shareholders of $1,496.6 and payments on long-term debt of $615.4.

The long-term debt proceeds included proceeds from our inaugural multi-currency green bonds that were issued during the second quarter in concurrent U.S. Dollar- and Euro-denominated fixed-rate note offerings with aggregate principal amounts of $600 and €700 million, respectively. Consistent with our Green Finance Framework, we have allocated the net proceeds to finance or refinance, in whole or in part, existing or future projects that are expected to have environmental benefits, including those related to pollution prevention and control, renewable energy generation and procurement, and sustainable aviation fuel. We expect to issue our first allocation report in 2024. Additionally, as further discussed below, the NGHC joint venture borrowed approximately $1.4 billion. These proceeds were partially offset by financing fees of approximately $150, which are reflected within "Other financing activities". Refer to the *Credit Facilities* section below as well as Note 16, *Debt*, to the consolidated financial statements for additional information.

In fiscal year 2022, cash used for financing activities was $1,000.6. The use of cash was primarily driven by dividend payments to shareholders of $1,383.3 and payments on long-term debt of $400.0 for the repayment of a 3.0% Senior Note. These uses of cash were partially offset by long-term debt proceeds and short-term borrowings of $766.2 and $17.9, respectively.

Financing and Capital Structure

Total debt increased from $7,644.8 as of 30 September 2022 to $10,305.8 as of 30 September 2023, primarily due to non-recourse project financing secured by the NGHC joint venture for construction of the NEOM Green Hydrogen project, issuance of our inaugural green U.S. Dollar- and Euro-denominated fixed-rate notes, and an increase in outstanding commercial paper. Total debt includes related party debt of $328.3 and $781.0 as of 30 September 2023 and 30 September 2022, respectively.

Various debt agreements to which we are a party include financial covenants and other restrictions, including restrictions pertaining to the ability to create property liens and enter into certain sale and leaseback transactions. As of 30 September 2023, we were in compliance with all of the financial and other covenants under our debt agreements.

2021 Credit Agreement

We have a five-year $2.75 billion revolving credit agreement maturing 31 March 2026 with a syndicate of banks (the “2021 Credit Agreement”), under which senior unsecured debt is available to us and certain of our subsidiaries. The 2021 Credit Agreement provides a source of liquidity and supports our commercial paper program. No borrowings were outstanding under the 2021 Credit Agreement as of 30 September 2023. At this time, we do not expect to access the facility for additional liquidity.

The only financial covenant in the 2021 Credit Agreement is a maximum ratio of total debt to total capitalization (equal to total debt plus total equity) not to exceed 70%. The 2021 Credit Agreement defines total debt as the aggregate principal amount of all indebtedness, excluding limited recourse debt of any project finance subsidiary. Accordingly, this calculation does not consider borrowings associated with NGHC. Total debt to total capitalization was 36.6% and 35.8% as of 30 September 2023 and 30 September 2022, respectively.

Foreign Credit Facilities

We also have credit facilities available to certain of our foreign subsidiaries totaling $1,596.8, of which $1,041.4 was borrowed and outstanding as of 30 September 2023. The amount borrowed and outstanding as of 30 September 2022 was $457.5. The increase from 30 September 2022 was driven by borrowings on a new variable-rate Saudi Riyal loan facility that matures in October 2026. The interest rate on the facility is based on the Saudi Arabian Interbank Offered Rate plus an annual margin of 1.35%. We entered into this facility in October 2022 and utilized a portion of the proceeds to repay a variable-rate 4.10% Saudi Riyal Loan Facility of $195.6, which was presented within long-term debt on our consolidated balance sheet as of 30 September 2022.

NEOM Green Hydrogen Project Financing

In May 2023, NGHC secured non-recourse project financing of approximately $6.1 billion, which is expected to fund approximately 73% of the NEOM Green Hydrogen Project and will be drawn over the construction period. At the same time, NGHC secured additional non-recourse credit facilities totaling approximately $500 primarily for working capital needs. As of 30 September 2023, the joint venture had borrowed $1.4 billion of the available financing. Refer to Note 3, *Variable Interest Entities*, to the consolidated financial statements for additional information.

Dividends

The Board of Directors determines whether to declare cash dividends on our common stock and the timing and amount based on financial condition and other factors it deems relevant. In fiscal year 2023, the Board of Directors increased the quarterly dividend to $1.75 per share, representing an 8% increase, or $0.13 per share, from the previous dividend of $1.62 per share. We expect to continue increasing our quarterly dividend as we have done for the last 41 consecutive years.

Dividends are paid quarterly, usually during the sixth week after the close of the fiscal quarter. On 21 July 2023, the Board of Directors declared a quarterly dividend of $1.75 per share that was payable on 13 November 2023 to shareholders of record at the close of business on 2 October 2023. On 15 November 2023, the Board of Directors declared a quarterly dividend of $1.75 per share that is payable on 12 February 2024 to shareholders of record at the close of business on 2 January 2024.

Discontinued Operations

In fiscal years 2023 and 2022, cash provided by operating activities of discontinued operations of $0.6 and $59.6, respectively, resulted from cash received as part of state tax refunds related to the sale of our former Performance Materials Division in fiscal year 2017.

PENSION BENEFITS

We and certain of our subsidiaries sponsor defined benefit pension plans and defined contribution plans that cover a substantial portion of our worldwide employees. The principal defined benefit pension plans are the U.S. salaried pension plan and the U.K. pension plan. These plans were closed to new participants in 2005, after which defined contribution plans were offered to new employees. The shift to defined contribution plans is expected to continue to reduce volatility of both plan expense and contributions. For additional information, refer to Note 17, *Retirement Benefits*, to the consolidated financial statements.

Net Periodic Cost (Benefit)

The table below summarizes the components of net periodic cost/benefit for our U.S. and international defined benefit pension plans for the fiscal years ended 30 September:

	2023	2022
Service cost	**$23.2**	$39.8
Non-service related costs (benefits)	**86.8**	(44.7)
Other	**0.9**	1.3
Net Periodic Cost (Benefit)	**$110.9**	($3.6)

Net periodic cost was $110.9 in fiscal year 2023 versus a benefit of $3.6 in the prior year. The increased costs from the prior year were primarily attributable to higher non-service costs, which were driven by higher interest cost and lower expected returns on plan assets due to a smaller beginning balance of plan assets. The net impact of non-service related items are reflected within "Other non-operating income (expense), net" on our consolidated income statements.

Service costs result from benefits earned by active employees and are reflected as operating expenses primarily within "Cost of sales" and "Selling and administrative expense" on our consolidated income statements. The amount of service costs capitalized in fiscal years 2023 and 2022 was not material.

The table below summarizes the assumptions used in the calculation of net periodic cost/benefit for the fiscal years ended 30 September:

	2023	2022
Weighted average discount rate – Service cost	**5.1 %**	2.4 %
Weighted average discount rate – Interest cost	**5.3 %**	2.0 %
Weighted average expected rate of return on plan assets	**5.3 %**	5.1 %
Weighted average expected rate of compensation increase	**3.5 %**	3.4 %

2024 Outlook

In fiscal year 2024, we expect to recognize pension expense of approximately $120 to $130 primarily driven by approximately $100 to $110 of non-service related costs, including lower estimated expected returns on plan assets due to a smaller beginning balance of plan assets and higher interest cost, partially offset by a decrease in actuarial loss amortization.

In fiscal year 2023, we recognized net actuarial losses of $4.4 in other comprehensive income. Actuarial gains and losses are amortized into pension expense over prospective periods to the extent they are not offset by future gains or losses. Future changes in the discount rate and actual returns on plan assets could impact the actuarial gain or loss and resulting amortization in years beyond fiscal year 2024.

Pension Funding

Funded Status

The projected benefit obligation represents the actuarial present value of benefits attributable to employee service rendered to date, including the effects of estimated future salary increases. The plan funded status is calculated as the difference between the projected benefit obligation and the fair value of plan assets at the end of the period.

The table below summarizes the projected benefit obligation, the fair value of plan assets, and the funded status for our U.S. and international plans as of 30 September:

	2023	2022
Projected benefit obligation	**$3,511.2**	$3,588.3
Fair value of plan assets at end of year	**3,433.0**	3,526.0
Plan Funded Status	**($78.2)**	($62.3)

The net unfunded liability of $78.2 as of 30 September 2023 increased $15.9 from $62.3 as of 30 September 2022, as increases to the projected benefit obligation from the service and interest cost components of net period pension cost were greater than actuarial gains from higher discount rates.

Company Contributions

Pension funding includes both contributions to funded plans and benefit payments for unfunded plans, which are primarily non-qualified plans. With respect to funded plans, our funding policy is that contributions, combined with appreciation and earnings, will be sufficient to pay benefits without creating unnecessary surpluses.

In addition, we make contributions to satisfy all legal funding requirements while managing our capacity to benefit from tax deductions attributable to plan contributions. With the assistance of third-party actuaries, we analyze the liabilities and demographics of each plan, which help guide the level of contributions. During 2023 and 2022, our cash contributions to funded pension plans and benefit payments for unfunded pension plans were $32.6 and $44.7, respectively.

For fiscal year 2024, cash contributions to defined benefit plans are estimated to be $35 to $45. The estimate is based on expected contributions to certain international plans and anticipated benefit payments for unfunded plans, which are dependent upon the timing of retirements. Actual future contributions will depend on future funding legislation, discount rates, investment performance, plan design, and various other factors.

CRITICAL ACCOUNTING POLICIES AND ESTIMATES

Refer to Note 1, *Basis of Presentation and Major Accounting Policies*, and Note 2, *New Accounting Guidance*, to the consolidated financial statements for a description of our major accounting policies and information concerning implementation and impact of new accounting guidance.

The accounting policies discussed below are those policies that we consider to be the most critical to understanding our financial statements because they require management's most difficult, subjective, or complex judgments, often as the result of the need to make estimates about the effects of matters that are inherently uncertain. These estimates reflect our best judgment about current and/or future economic and market conditions and their effect based on information available as of the date of our consolidated financial statements. If conditions change, actual results may differ materially from these estimates. Our management has reviewed these critical accounting policies and estimates and related disclosures with the Audit and Finance Committee of our Board of Directors.

Depreciable Lives of Plant and Equipment

Plant and equipment, net at 30 September 2023 totaled $17,472.1, and depreciation expense totaled $1,325.8 during fiscal year 2023. Plant and equipment is recorded at cost and depreciated using the straight-line method, which deducts equal amounts of the cost of each asset from earnings every year over its estimated economic useful life.

Economic useful life is the duration of time an asset is expected to be productively employed by us, which may be less than its physical life. Assumptions on the following factors, among others, affect the determination of estimated economic useful life: wear and tear, obsolescence, technical standards, contract life, market demand, competitive position, raw material availability, and geographic location.

The estimated economic useful life of an asset is monitored to determine its appropriateness, especially when business circumstances change. For example, changes in technology, changes in the estimated future demand for products, excessive wear and tear, or unanticipated government actions may result in a shorter estimated useful life than originally anticipated. In these cases, we would depreciate the remaining net book value over the new estimated remaining life, thereby increasing depreciation expense per year on a prospective basis. Likewise, if the estimated useful life is increased, the adjustment to the useful life decreases depreciation expense per year on a prospective basis.

Our regional segments have numerous long-term customer supply contracts for which we construct an on-site plant adjacent to or near the customer’s facility. These contracts typically have initial contract terms of 10 to 20 years. Depreciable lives of the production assets related to long-term supply contracts are generally matched to the contract lives. Extensions to the contract term of supply frequently occur prior to the expiration of the initial term. As contract terms are extended, the depreciable life of the associated production assets is adjusted to match the new contract term, as long as it does not exceed the remaining physical life of the asset.

Our regional segments also have contracts for liquid or gaseous bulk supply and, for smaller customers, packaged gases. The depreciable lives of production facilities associated with these contracts are generally 15 years. These depreciable lives have been determined based on historical experience combined with judgment on future assumptions such as technological advances, potential obsolescence, competitors’ actions, etc.

In addition, we may purchase assets through transactions accounted for as either an asset acquisition or a business combination. Depreciable lives are assigned to acquired assets based on the age and condition of the assets, the remaining duration of long-term supply contracts served by the assets, and our historical experience with similar assets. Management monitors its assumptions and may potentially need to adjust depreciable life as circumstances change.

Impairment of Assets

There were no triggering events in fiscal year 2023 that would require impairment testing for any of our asset groups, reporting units that contain goodwill, or indefinite-lived intangibles assets. We completed our annual impairment tests for goodwill and other indefinite-lived intangible assets and concluded there were no indications of impairment. Refer to the “Impairment of Assets” subsections below for additional detail.

Impairment of Assets: Plant and Equipment

Plant and equipment meeting the held for sale criteria are reported at the lower of carrying amount or fair value less cost to sell. Plant and equipment to be disposed of other than by sale may be reviewed for impairment upon the occurrence of certain triggering events, such as unexpected contract terminations or unexpected foreign government-imposed restrictions or expropriations. Plant and equipment held for use is grouped for impairment testing at the lowest level for which there is identifiable cash flows. Impairment testing of the asset group occurs whenever events or changes in circumstances indicate that the carrying amount of the assets may not be recoverable. Such circumstances may include:

- a significant decrease in the market value of a long-lived asset grouping;
- a significant adverse change in the manner in which the asset grouping is being used or in its physical condition;
- an accumulation of costs significantly in excess of the amount originally expected for the acquisition or construction of the long-lived asset;
- a reduction in revenues that is other than temporary;
- a history of operating or cash flow losses associated with the use of the asset grouping; or
- changes in the expected useful life of the long-lived assets.

If such circumstances are determined to exist, an estimate of undiscounted future cash flows produced by that asset group is compared to the carrying value to determine whether impairment exists. If an asset group is determined to be impaired, the loss is measured based on the difference between the asset group’s fair value and its carrying value. An estimate of the asset group’s fair value is based on the discounted value of its estimated cash flows.

The assumptions underlying the undiscounted future cash flow projections require significant management judgment. Factors that management must estimate include industry and market conditions, sales volume and prices, costs to produce, inflation, etc. The assumptions underlying the cash flow projections represent management’s best estimates at the time of the impairment review and could include probability weighting of cash flow projections associated with multiple potential future scenarios. Changes in key assumptions or actual conditions that differ from estimates could result in an impairment charge. We use reasonable and supportable assumptions when performing impairment reviews and cannot predict the occurrence of future events and circumstances that could result in impairment charges.

In fiscal year 2023, there was no need to test for impairment on any of our asset groupings as no events or changes in circumstances indicated that the carrying amount of our asset groupings may not be recoverable.

Impairment of Assets: Goodwill

The acquisition method of accounting for business combinations requires us to make use of estimates and judgments to allocate the purchase price paid for acquisitions to the fair value of the net tangible and identifiable intangible assets. Goodwill represents the excess of the aggregate purchase price (plus the fair value of any noncontrolling interest and previously held equity interest in the acquiree) over the fair value of identifiable net assets of an acquired entity. Goodwill was $861.7 as of 30 September 2023. Disclosures related to goodwill are included in Note 11, *Goodwill*, to the consolidated financial statements.

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. The tests are done at the reporting unit level, which is defined as being equal to or one level below the operating segment for which discrete financial information is available and whose operating results are reviewed by segment managers regularly. We have five reportable business segments, seven operating segments and 11 reporting units, eight of which include a goodwill balance. Refer to Note 25, *Business Segment and Geographic Information*, for additional information. Reporting units are primarily based on products and subregions within each reportable segment. The majority of our goodwill is assigned to reporting units within our regional industrial gases segments.

As part of the goodwill impairment testing, we have the option to first assess qualitative factors to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying value. However, we choose to bypass the qualitative assessment and conduct quantitative testing to determine if the carrying value of the reporting unit exceeds its fair value. An impairment loss will be recognized for the amount by which the carrying value of the reporting unit exceeds its fair value, not to exceed the total amount of goodwill allocated to that reporting unit.

To determine the fair value of a reporting unit, we initially use an income approach valuation model, representing the present value of estimated future cash flows. Our valuation model uses a discrete growth period and an estimated exit trading multiple. The income approach is an appropriate valuation method due to our capital-intensive nature, the long-term contractual nature of our business, and the relatively consistent cash flows generated by our reporting units. The principal assumptions utilized in our income approach valuation model include revenue growth rates, operating profit and/or adjusted EBITDA margins, discount rate, and exit multiple. Projected revenue growth rates and operating profit and/or adjusted EBITDA assumptions are consistent with those utilized in our operating plan and/or revised forecasts and long-term financial planning process. The discount rate assumption is calculated based on an estimated market-participant risk-adjusted weighted-average cost of capital, which includes factors such as the risk-free rate of return, cost of debt, and expected equity premiums. The exit multiple is determined from comparable industry transactions and where appropriate, reflects expected long-term growth rates.

If our initial review under the income approach indicates there may be impairment, we incorporate results under the market approach to further evaluate the existence of impairment. When the market approach is utilized, fair value is estimated based on market multiples of revenue and earnings derived from comparable publicly-traded industrial gases companies and/or regional manufacturing companies engaged in the same or similar lines of business as the reporting unit, adjusted to reflect differences in size and growth prospects. When both the income and market approach are utilized, we review relevant facts and circumstances and make a qualitative assessment to determine the proper weighting. Management judgment is required in the determination of each assumption utilized in the valuation model, and actual results could differ from the estimates.

In the fourth quarter of fiscal year 2023, we conducted our annual goodwill impairment test, noting no indications of impairment. The fair value of all our reporting units substantially exceeded their carrying value.

Future events that could have a negative impact on the level of excess fair value over carrying value of the reporting units include, but are not limited to: long-term economic weakness, decline in market share, pricing pressures, inability to successfully implement cost improvement measures, increases to our cost of capital, changes in the strategy of the reporting unit, and changes to the structure of our business as a result of future reorganizations or divestitures of assets or businesses. Negative changes in one or more of these factors, among others, could result in impairment charges.

Impairment of Assets: Intangible Assets

Intangible assets, net with determinable lives at 30 September 2023 totaled $297.5 and consisted primarily of customer relationships, purchased patents and technology, and land use rights. These intangible assets are tested for impairment as part of the long-lived asset grouping impairment tests. Impairment testing of the asset group occurs whenever events or changes in circumstances indicate that the carrying value of the assets may not be recoverable. See the impairment discussion above under "*Impairment of Assets – Plant and Equipment*" for a description of how impairment losses are determined.

Indefinite-lived intangible assets at 30 September 2023 totaled $37.1 and consisted of trade names and trademarks. Indefinite-lived intangibles are subject to impairment testing at least annually or more frequently if events or changes in circumstances indicate that potential impairment exists. The impairment test for indefinite-lived intangible assets involves calculating the fair value of the indefinite-lived intangible assets and comparing the fair value to their carrying value. If the fair value is less than the carrying value, the difference is recorded as an impairment loss. To determine fair value, we utilize the royalty savings method, a form of the income approach. This method values an intangible asset by estimating the royalties avoided through ownership of the asset.

Disclosures related to intangible assets other than goodwill are included in Note 12, *Intangible Assets*, to the consolidated financial statements.

In the fourth quarter of fiscal year 2023, we conducted our annual impairment test of indefinite-lived intangibles, noting no indications of impairment.

Impairment of Assets: Equity Method Investments

Investments in and advances to equity affiliates totaled $4,617.8 at 30 September 2023. The majority of our equity method investments are ventures with other industrial gas companies. Summarized financial information of our equity affiliates is included in Note 9, *Equity Affiliates*, to the consolidated financial statements. We review our equity method investments for impairment whenever events or changes in circumstances indicate that the carrying amount of the investment may not be recoverable.

An impairment loss is recognized in the event that an other-than-temporary decline in fair value below the carrying value of an investment occurs. We estimate the fair value of our investments under the income approach, which considers the estimated discounted future cash flows expected to be generated by the investee, and/or the market approach, which considers market multiples of revenue and earnings derived from comparable publicly-traded industrial gas companies. Changes in key assumptions about the financial condition of an investee or actual conditions that differ from estimates could result in an impairment charge.

In fiscal year 2023, there was no need to test any of our equity affiliate investments for impairment as no events or changes in circumstances indicated that the carrying amount of the investments may not be recoverable.

Revenue Recognition: Cost Incurred Input Method

Revenue from equipment sale 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 use a cost incurred input method to recognize revenue 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.

Accounting for contracts using the cost incurred input method requires management judgment relative to assessing risks and their impact on the estimates of revenues and costs. Our estimates are impacted by factors such as the potential for incentives or penalties on performance, schedule delays, technical issues, cost inflation, labor productivity, the complexity of work performed, the availability of materials, and performance of subcontractors. When adjustments in estimated total contract revenues or estimated total costs are required, any changes in the estimated profit from prior estimates are recognized in the current period for the inception-to-date effect of such change. When estimates of total costs to be incurred on a contract exceed estimates of total revenues to be earned, a provision for the entire estimated loss on the contract is recorded in the period in which the loss is determined.

In addition to the typical risks associated with underlying performance of engineering, project procurement, and construction activities, our sale of equipment projects within our Corporate and other segment require monitoring of risks associated with schedule, geography, and other aspects of the contract and their effects on our estimates of total revenues and total costs to complete the contract.

Changes in estimates on projects accounted for under the cost incurred input method unfavorably impacted operating income by approximately $115 in fiscal year 2023 and $30 in fiscal year 2022.

We assess the performance of our sale of equipment projects as they progress. Our earnings could be positively or negatively impacted by changes to our contractual revenues and cost forecasts on these projects.

Revenue Recognition: On-site Customer Contracts

For customers who require large volumes of gases on a long-term basis, we produce and supply gases under long-term contracts from large facilities that we build, own, and operate on or near the customer’s facilities. Certain of these on-site contracts contain complex terms and provisions regarding tolling arrangements, minimum payment requirements, variable components, pricing provisions, and amendments, which require significant judgment to determine the amount and timing of revenue recognition.

Income Taxes

We account for income taxes under the asset and liability method. Under this method, deferred tax assets and liabilities are recognized for the tax effects of temporary differences between the financial reporting and tax basis of assets and liabilities measured using enacted tax rates in effect for the year in which the differences are expected to be recovered or settled. As of 30 September 2023, accrued income taxes, including the amount recorded as noncurrent, was $240.6, and net deferred tax liabilities were $1,106.4. Tax liabilities related to uncertain tax positions as of 30 September 2023 were $96.5, excluding interest and penalties. Income tax expense for the fiscal year ended 30 September 2023 was $551.2.

Management judgment is required concerning the ultimate outcome of tax contingencies and the realization of deferred tax assets.

Actual income taxes paid may vary from estimates, depending upon changes in income tax laws, actual results of operations, and the final audit of tax returns by taxing authorities. Tax assessments may arise several years after tax returns have been filed. We believe that our recorded tax liabilities adequately provide for these assessments.

Deferred tax assets are recorded for operating losses and tax credit carryforwards. However, when we do not expect sufficient sources of future taxable income to realize the benefit of the operating losses or tax credit carryforwards, these deferred tax assets are reduced by a valuation allowance. A valuation allowance is recognized if, based on the weight of available evidence, it is considered more likely than not that some portion or all of the deferred tax asset will not be realized. The factors used to assess the likelihood of realization include forecasted future taxable income and available tax planning strategies that could be implemented to realize or renew net deferred tax assets in order to avoid the potential loss of future tax benefits. The effect of a change in the valuation allowance is reported in income tax expense.

A 1% increase or decrease in our effective tax rate may result in a decrease or increase to net income, respectively, of approximately $29.

Disclosures related to income taxes are included in Note 23, *Income Taxes*, to the consolidated financial statements.

Pension and Other Postretirement Benefits

The amounts recognized in the consolidated financial statements for pension and other postretirement benefits are determined on an actuarial basis utilizing numerous assumptions. The discussion that follows provides information on the significant assumptions, expense, and obligations associated with the defined benefit plans.

Actuarial models are used in calculating the expense and liability related to the various defined benefit plans. These models have an underlying assumption that the employees render service over their service lives on a relatively consistent basis; therefore, the expense of benefits earned should follow a similar pattern.

Several assumptions and statistical variables are used in the models to calculate the expense and liability related to the plans. We determine assumptions about the discount rate, the expected rate of return on plan assets, and the rate of compensation increase. Note 17, *Retirement Benefits*, to the consolidated financial statements includes disclosure of these rates on a weighted-average basis for both the U.S. and international plans. The actuarial models also use assumptions about demographic factors such as retirement age, mortality, and turnover rates. Mortality rates are based on the most recent U.S. and international mortality tables. We believe the actuarial assumptions are reasonable. However, actual results could vary materially from these actuarial assumptions due to economic events and differences in rates of retirement, mortality, and turnover.

One of the assumptions used in the actuarial models is the discount rate used to measure benefit obligations. This rate reflects the prevailing market rate for high-quality, fixed-income debt instruments with maturities corresponding to the expected timing of benefit payments as of the annual measurement date for each of the various plans. We measure the service cost and interest cost components of pension expense by applying spot rates along the yield curve to the relevant projected cash flows. The rates along the yield curve are used to discount the future cash flows of benefit obligations back to the measurement date. These rates change from year to year based on market conditions that affect corporate bond yields. A higher discount rate decreases the present value of the benefit obligations and results in lower pension expense. With respect to impacts on pension benefit obligations, a 50 bp increase or decrease in the discount rate may result in a decrease or increase, respectively, to pension expense of approximately $15 per year.

The expected rate of return on plan assets represents an estimate of the long-term average rate of return to be earned by plan assets reflecting current asset allocations. In determining estimated asset class returns, we take into account historical and future expected long-term returns and the value of active management, as well as the interest rate environment. Asset allocation is determined based on long-term return, volatility and correlation characteristics of the asset classes, the profiles of the plans' liabilities, and acceptable levels of risk. Lower returns on the plan assets result in higher pension expense. A 50 bp increase or decrease in the estimated rate of return on plan assets may result in a decrease or increase, respectively, to pension expense of approximately $17 per year.

We use a market-related valuation method for recognizing certain investment gains or losses for our significant pension plans. Investment gains or losses are the difference between the expected return and actual return on plan assets. The expected return on plan assets is determined based on a market-related value of plan assets. This is a calculated value that recognizes investment gains and losses on equities over a five-year period from the year in which they occur and reduces year-to-year volatility. The market-related value for non-equity investments equals the actual fair value. Expense in future periods will be impacted as gains or losses are recognized in the market-related value of assets.

The expected rate of compensation increase is another key assumption. We determine this rate based on review of the underlying long-term salary increase trend characteristic of labor markets and historical experience, as well as comparison to peer companies. A 50 bp increase or decrease in the expected rate of compensation may result in an increase or decrease to pension expense, respectively, of approximately $4 per year.

Loss Contingencies

In the normal course of business, we encounter contingencies, or situations involving varying degrees of uncertainty as to the outcome and effect on our company. We accrue a liability for loss contingencies when it is considered probable that a liability has been incurred and the amount of loss can be reasonably estimated. When only a range of possible loss can be established, the most probable amount in the range is accrued. If no amount within this range is a better estimate than any other amount within the range, the minimum amount in the range is accrued.

Contingencies include those associated with litigation and environmental matters, for which our accounting policy is discussed in Note 1, *Basis of Presentation and Major Accounting Policies*, to the consolidated financial statements, and details are provided in Note 18, *Commitments and Contingencies*, to the consolidated financial statements. Significant judgment is required to determine both the probability and whether the amount of loss associated with a contingency can be reasonably estimated. These determinations are made based on the best available information at the time. As additional information becomes available, we reassess probability and estimates of loss contingencies. Revisions to the estimates associated with loss contingencies could have a significant impact on our results of operations in the period in which an accrual for loss contingencies is recorded or adjusted. For example, due to the inherent uncertainties related to environmental exposures, a significant increase to environmental liabilities could occur if a new site is designated, the scope of remediation is increased, a different remediation alternative is identified, or our proportionate share of the liability increases. Similarly, a future charge for regulatory fines or damage awards associated with litigation could have a significant impact on our net income in the period in which it is recorded.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

Our earnings, cash flows, and financial position are exposed to market risks arising from fluctuations in interest rates and foreign currency exchange rates. It is our policy to minimize our cash flow exposure to adverse changes in currency exchange rates and to manage the financial risks inherent in funding with debt capital.

We address these financial exposures through a controlled program of risk management that includes the use of derivative financial instruments. We have established counterparty credit guidelines and generally enter into transactions with financial institutions of investment grade or better, thereby minimizing the risk of credit loss. All instruments are entered into for other than trading purposes. For details on the types and use of these derivative instruments and related major accounting policies, refer to Note 1, *Basis of Presentation and Major Accounting Policies*, and Note 14, *Financial Instruments*, to the consolidated financial statements. Additionally, we mitigate adverse energy price impacts through our cost pass-through contracts with customers and price increases.

Our derivative and other financial instruments consist of long-term debt, including the current portion and amounts owed to related parties; interest rate swaps; cross currency interest rate swaps; and foreign exchange-forward contracts. The net market value of these financial instruments combined is referred to below as the "net financial instrument position" and is disclosed in Note 15, *Fair Value Measurements*, to the consolidated financial statements. Our net financial instrument position increased from a liability of $6,898.6 at 30 September 2022 to a liability of $8,990.8 at 30 September 2023. The increase was primarily due to NEOM Green Hydrogen Project financing and the issuance of U.S. Dollar- and Euro-denominated fixed-rate notes during the fiscal year.

The analysis below presents the sensitivity of the market value of our financial instruments to selected changes in market rates and prices. Market values are the present values of projected future cash flows based on the market rates and prices chosen. The market values for interest rate risk and foreign currency risk are calculated by us using a third-party software model that utilizes standard pricing models to determine the present value of the instruments based on market conditions as of the valuation date, such as interest rates, spot and forward exchange rates, and implied volatility.

Interest Rate Risk

Our debt portfolio as of 30 September 2023, including the effect of currency and interest rate swap agreements, was composed of 80% fixed-rate debt and 20% variable-rate debt. Our debt portfolio as of 30 September 2022, including the effect of currency and interest rate swap agreements, was composed of 79% fixed-rate debt and 21% variable-rate debt.

The sensitivity analysis related to the interest rate risk on the fixed portion of our debt portfolio assumes an instantaneous 100 bp parallel move in interest rates from the level at 30 September 2023, with all other variables held constant. A 100 bp increase in market interest rates would result in a decrease of $728 and $364 in the net liability position of financial instruments at 30 September 2023 and 2022, respectively. A 100 bp decrease in market interest rates would result in an increase of $845 and $425 in the net liability position of financial instruments at 30 September 2023 and 2022, respectively.

Based on the variable-rate debt included in our debt portfolio, including the interest rate swap agreements, a 100 bp increase in interest rates would result in an additional $21 and $16 of interest incurred per year at 30 September 2023 and 2022, respectively. A 100 bp decline in interest rates would lower interest incurred by $21 and $16 per year at 30 September 2023 and 2022, respectively.

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 September 2023 and 2022, 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 $308 and $165 in the net liability position of financial instruments at 30 September 2023 and 2022, respectively. The increase in sensitivity is primarily due to the issuance of Euro-denominated fixed-rate notes during the fiscal year.

The primary currency pairs for which we have exchange rate exposure are the Euro and U.S. Dollar and Chinese Renminbi and U.S. Dollar. Foreign currency debt, cross currency interest rate swaps, and foreign exchange-forward contracts are used in countries where we do business, thereby reducing our net asset exposure. Foreign exchange-forward contracts and cross currency interest rate swaps are also used to hedge our firm and highly anticipated foreign currency cash flows. Thus, there is either an asset or liability or cash flow exposure related to all of the financial instruments in the above sensitivity analysis for which the impact of a movement in exchange rates would be in the opposite direction and materially equal to the impact on the instruments in the analysis.

The majority of our sales are denominated in foreign currencies as they are derived outside the United States. Therefore, financial results will be affected by changes in foreign currency rates. The Chinese Renminbi and the Euro represent the largest exposures in terms of our foreign earnings. We estimate that a 10% reduction in either the Chinese Renminbi or the Euro versus the U.S. Dollar would lower our annual operating income by approximately $55 and $20, respectively.

Item 8. Financial Statements and Supplementary Data

INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

MANAGEMENT'S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING

Air Products' management is responsible for establishing and maintaining adequate internal control over financial reporting. Our internal control over financial reporting, which is defined in the following sentences, is a process designed to provide reasonable assurance regarding the reliability of our financial reporting and the preparation of financial statements for external purposes in accordance with U.S. generally accepted accounting principles and includes those policies and procedures that:

(i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the Company;

(ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with U.S. generally accepted accounting principles, and that receipts and expenditures of the Company are being made only in accordance with authorizations of management and directors of the Company; and

(iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of the Company's assets that could have a material effect on the financial statements.

Because of inherent limitations, internal control over financial reporting can only provide reasonable assurance and may not prevent or detect misstatements. Further, because of changes in conditions, the effectiveness of our internal control over financial reporting may vary over time. Our processes contain self-monitoring mechanisms, and actions are taken to correct deficiencies as they are identified.

Management has evaluated the effectiveness of its internal control over financial reporting based on criteria established in *Internal Control—Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). Based on this evaluation, management concluded that, as of 30 September 2023, the Company's internal control over financial reporting was effective.

Deloitte & Touche LLP, an independent registered public accounting firm, has issued its opinion on the Company's internal control over financial reporting as of 30 September 2023 as stated in its report which appears herein.

/s/ Seifi Ghasemi	/s/ Melissa N. Schaeffer
Seifi Ghasemi	Melissa N. Schaeffer
Chairman, President, and	Senior Vice President and
Chief Executive Officer	Chief Financial Officer
16 November 2023	16 November 2023

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the shareholders and the Board of Directors of Air Products and Chemicals, Inc.

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of Air Products and Chemicals, Inc. and subsidiaries (the "Company") as of September 30, 2023 and 2022, the related consolidated income statements, comprehensive income statements, statements of equity, and statements of cash flows, for each of the three years in the period ended September 30, 2023, and the related notes (collectively referred to as the "financial statements"). We also have audited the Company's internal control over financial reporting as of September 30, 2023, based on criteria established in Internal Control — Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the Company as of September 30, 2023 and 2022, and the results of its operations and its cash flows for each of the three years in the period ended September 30, 2023, in conformity with accounting principles generally accepted in the United States of America. Also, in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of September 30, 2023, based on criteria established in Internal Control — Integrated Framework (2013) issued by COSO.

Basis for Opinions

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

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

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

Definition and Limitations of Internal Control over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

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

Critical Audit Matters

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

Revenue Recognition – On-site Customer Contracts – Refer to Notes 1 and 6 to the Financial Statements

Critical Audit Matter Description

On-site industrial gas customer contracts involve large capital investments to serve customers who require large volumes of gases and have relatively constant demand. The Company builds, owns and operates facilities on or near the customer's facilities to produce and supply the customer with gases under a long-term arrangement. Typically, these contracts have 15- to 20-year terms and contain fixed monthly charges and/or minimum purchase requirements. Revenue associated with these contracts is generally recognized over time during the period in which the Company delivers or makes available the agreed upon quantity of gases. In addition, certain on-site industrial gas contracts contain complex terms and provisions such as tolling arrangements, minimum payment requirements, pricing provisions, and variable components that are specific to a customer arrangement, including certain contracts with related parties. These arrangements may require greater judgment in determining when contractual requirements have been met, impacting the timing and amount of revenue to be recorded.

We identified revenue recognition for certain on-site industrial gas customer contracts with complex terms and provisions as a critical audit matter because of the judgments necessary for management to evaluate these contract terms, including amendments, in order to determine the amount of revenue to be recognized. This required a high degree of auditor judgment when performing procedures to audit management's determination of the amount and timing of revenue recognition and evaluating the results of those procedures.

How the Critical Audit Matter Was Addressed in the Audit

Our audit procedures related to revenue recognition for certain on-site industrial gas customer contracts with complex terms and provisions included the following procedures, among others:

- We tested the effectiveness of the Company's controls related to the amount and timing of revenue recognition, including controls over the evaluation of complex terms and provisions in certain on-site industrial gas customer contracts.
- We evaluated the terms included within original customer contracts and related amendments to assess the accounting for provisions such as minimum payment requirements, pricing provisions, settlement terms, and variable components that require management to apply judgment in determining revenue recognition associated with the contract.
- We evaluated customer transactions and agreed the amount of revenue recognized to underlying contracts, customer invoices, and cash receipts.
- We inquired of personnel who oversee operations, customer relations, and revenue recognition as to the presence of contract amendments, and interpretation of contract terms.
- We considered the nature of transactions with related parties and any potential impact on revenue recognition.

/s/ Deloitte & Touche LLP
Philadelphia, Pennsylvania
November 16, 2023

We have served as the Company's auditor since 2018.

Air Products and Chemicals, Inc. and Subsidiaries
CONSOLIDATED INCOME STATEMENTS
For the Fiscal Years Ended 30 September

(Millions of U.S. Dollars, except for share and per share data)	**2023**	2022	2021
Sales	**$12,600.0**	$12,698.6	$10,323.0
Cost of sales	**8,833.0**	9,338.5	7,186.1
Facility closure	**—**	—	23.2
Selling and administrative expense	**957.0**	900.6	828.4
Research and development expense	**105.6**	102.9	93.5
Business and asset actions	**244.6**	73.7	—
Gain on exchange with joint venture partner	**—**	—	36.8
Other income (expense), net	**34.8**	55.9	52.8
Operating Income	**2,494.6**	2,338.8	2,281.4
Equity affiliates' income	**604.3**	481.5	294.1
Interest expense	**177.5**	128.0	141.8
Other non-operating income (expense), net	**(39.0)**	62.4	73.7
Income From Continuing Operations Before Taxes	**2,882.4**	2,754.7	2,507.4
Income tax provision	**551.2**	500.8	462.8
Income From Continuing Operations	**2,331.2**	2,253.9	2,044.6
Income from discontinued operations, net of tax	**7.4**	12.6	70.3
Net Income	**2,338.6**	2,266.5	2,114.9
Net income attributable to noncontrolling interests of continuing operations	**38.4**	10.4	15.8
Net Income Attributable to Air Products	**$2,300.2**	$2,256.1	$2,099.1
Net Income Attributable to Air Products			
Net income from continuing operations	**$2,292.8**	$2,243.5	$2,028.8
Net income from discontinued operations	**7.4**	12.6	70.3
Net Income Attributable to Air Products	**$2,300.2**	$2,256.1	$2,099.1
Per Share Data[A] *(U.S. Dollars per share)*			
Basic EPS from continuing operations	**$10.31**	$10.11	$9.16
Basic EPS from discontinued operations	**0.03**	0.06	0.32
Basic EPS attributable to Air Products	**$10.35**	$10.16	$9.47
Diluted EPS from continuing operations	**$10.30**	$10.08	$9.12
Diluted EPS from discontinued operations	**0.03**	0.06	0.32
Diluted EPS Attributable to Air Products	**$10.33**	$10.14	$9.43
Weighted Average Common Shares *(in millions)*			
Basic	**222.3**	222.0	221.6
Diluted	**222.7**	222.5	222.5

[A] Earnings per share ("EPS") is calculated independently for each component and may not sum to total EPS due to rounding.

The accompanying notes are an integral part of these statements.

Air Products and Chemicals, Inc. and Subsidiaries
CONSOLIDATED COMPREHENSIVE INCOME STATEMENTS
For the Fiscal Years Ended 30 September

(Millions of U.S. Dollars)	**2023**	2022	2021
Net Income	**$2,338.6**	$2,266.5	$2,114.9
Other Comprehensive Income (Loss), net of tax:			
Translation adjustments, net of tax of ($32.8), $71.2, and $2.8	**151.1**	(1,230.5)	267.3
Net gain (loss) on derivatives, net of tax of $48.6, ($63.9), and ($9.0)	**369.2**	(120.3)	3.3
Pension and postretirement benefits, net of tax of ($2.9), ($33.4), and $91.4	**(8.9)**	(112.2)	274.3
Reclassification adjustments:			
Currency translation adjustment	**(0.3)**	7.3	—
Derivatives, net of tax of ($13.6), $30.3, and $13.9	**(43.9)**	91.4	43.5
Pension and postretirement benefits, net of tax of $17.5, $21.8, and $24.4	**53.8**	64.8	74.6
Total Other Comprehensive Income (Loss)	**521.0**	(1,299.5)	663.0
Comprehensive Income	**2,859.6**	967.0	2,777.9
Net Income Attributable to Noncontrolling Interests	**38.4**	10.4	15.8
Other Comprehensive Income (Loss) Attributable to Noncontrolling Interests	**184.3**	(29.3)	38.8
Comprehensive Income Attributable to Air Products	**$2,636.9**	$985.9	$2,723.3

The accompanying notes are an integral part of these statements.

Air Products and Chemicals, Inc. and Subsidiaries
CONSOLIDATED BALANCE SHEETS
As of the Fiscal Years Ended 30 September

(Millions of U.S. Dollars, except for share and per share data)	**2023**	2022
Assets		
Current Assets		
Cash and cash items	**$1,617.0**	$2,711.0
Short-term investments	**332.2**	590.7
Trade receivables, net	**1,700.4**	1,794.4
Inventories	**651.8**	514.2
Prepaid expenses	**177.0**	156.8
Other receivables and current assets	**722.1**	515.8
Total Current Assets	**5,200.5**	6,282.9
Investment in net assets of and advances to equity affiliates	**4,617.8**	3,353.8
Plant and equipment, net	**17,472.1**	14,160.5
Goodwill, net	**861.7**	823.0
Intangible assets, net	**334.6**	347.5
Operating lease right-of-use assets, net	**974.0**	694.8
Noncurrent lease receivables	**494.7**	583.1
Financing receivables	**817.2**	—
Other noncurrent assets	**1,229.9**	947.0
Total Noncurrent Assets	**26,802.0**	20,909.7
Total Assets[A]	**$32,002.5**	$27,192.6
Liabilities and Equity		
Current Liabilities		
Payables and accrued liabilities	**$2,890.1**	$2,771.6
Accrued income taxes	**131.2**	135.2
Short-term borrowings	**259.5**	10.7
Current portion of long-term debt	**615.0**	548.3
Total Current Liabilities	**3,895.8**	3,465.8
Long-term debt	**9,280.6**	6,433.8
Long-term debt – related party	**150.7**	652.0
Noncurrent operating lease liabilities	**631.1**	592.1
Other noncurrent liabilities	**1,118.0**	1,099.1
Deferred income taxes	**1,266.0**	1,247.4
Total Noncurrent Liabilities	**12,446.4**	10,024.4
Total Liabilities[A]	**16,342.2**	13,490.2
Commitments and Contingencies - See Note 18		
Air Products Shareholders' Equity		
Common stock (par value $1 per share; issued 2023 and 2022 - 249,455,584 shares)	**249.4**	249.4
Capital in excess of par value	**1,190.5**	1,141.4
Retained earnings	**17,289.7**	16,520.3
Accumulated other comprehensive loss	**(2,449.4)**	(2,786.1)
Treasury stock, at cost (2023 - 27,255,739 shares; 2022 - 27,616,888 shares)	**(1,967.3)**	(1,981.0)
Total Air Products Shareholders' Equity	**14,312.9**	13,144.0
Noncontrolling Interests[A]	**1,347.4**	558.4
Total Equity	**15,660.3**	13,702.4
Total Liabilities and Equity	**$32,002.5**	$27,192.6

[A] Includes balances associated with a consolidated variable interest entity ("VIE"), including amounts reflected in "Total Assets" that can only be used to settle obligations of the VIE of $2,256.8 and $519.7 as of 30 September 2023 and 30 September 2022, respectively, as well as liabilities of the VIE reflected within "Total Liabilities" for which creditors do not have recourse to the general credit of Air Products of $1,461.1 and $506.8 as of 30 September 2023 and 30 September 2022, respectively. Refer to Note 3, *Variable Interest Entities*, for additional information.

The accompanying notes are an integral part of these statements.

Air Products and Chemicals, Inc. and Subsidiaries
CONSOLIDATED STATEMENTS OF CASH FLOWS
For the Fiscal Years Ended 30 September

(Millions of U.S. Dollars)	**2023**	2022	2021
Operating Activities			
Net income	**$2,338.6**	$2,266.5	$2,114.9
Less: Net income attributable to noncontrolling interests of continuing operations	**38.4**	10.4	15.8
Net income attributable to Air Products	**2,300.2**	2,256.1	2,099.1
Net income from discontinued operations	**(7.4)**	(12.6)	(70.3)
Net income from continuing operations attributable to Air Products	**2,292.8**	2,243.5	2,028.8
Adjustments to reconcile income to cash provided by operating activities:			
Depreciation and amortization	**1,358.3**	1,338.2	1,321.3
Deferred income taxes	**(24.7)**	32.3	94.0
Facility closure	**—**	—	23.2
Business and asset actions	**244.6**	73.7	—
Undistributed earnings of equity method investments	**(261.2)**	(214.7)	(138.2)
Gain on sale of assets and investments	**(15.8)**	(24.1)	(37.2)
Share-based compensation	**59.9**	48.4	44.5
Noncurrent lease receivables	**79.6**	94.0	98.8
Other adjustments	**(103.0)**	(304.9)	(116.7)
Working capital changes that provided (used) cash, excluding effects of acquisitions:			
Trade receivables	**130.7**	(475.2)	(130.5)
Inventories	**(129.4)**	(94.3)	(47.2)
Other receivables	**(93.8)**	(1.8)	75.5
Payables and accrued liabilities	**(213.3)**	532.5	187.9
Other working capital	**(119.0)**	(77.0)	(69.0)
Cash Provided by Operating Activities	**3,205.7**	3,170.6	3,335.2
Investing Activities			
Additions to plant and equipment, including long-term deposits	**(4,626.4)**	(2,926.5)	(2,464.2)
Acquisitions, less cash acquired	**—**	(65.1)	(10.5)
Investment in and advances to unconsolidated affiliates	**(912.0)**	(1,658.4)	(76.0)
Investment in financing receivables	**(665.1)**	—	—
Proceeds from sale of assets and investments	**25.4**	46.2	37.5
Purchases of investments	**(640.1)**	(1,637.8)	(2,100.7)
Proceeds from investments	**897.0**	2,377.4	1,875.2
Other investing activities	**4.8**	7.0	5.8
Cash Used for Investing Activities	**(5,916.4)**	(3,857.2)	(2,732.9)
Financing Activities			
Long-term debt proceeds	**3,516.2**	766.2	178.9
Payments on long-term debt	**(615.4)**	(400.0)	(462.9)
Net increase in commercial paper and short-term borrowings	**268.2**	17.9	1.0
Dividends paid to shareholders	**(1,496.6)**	(1,383.3)	(1,256.7)
Proceeds from stock option exercises	**24.0**	19.3	10.6
Investments by noncontrolling interests	**234.9**	21.0	136.6
Distributions to noncontrolling interests	**(115.9)**	(4.8)	(5.3)
Other financing activities	**(205.8)**	(36.9)	(23.1)
Cash Provided by (Used for) Financing Activities	**1,609.6**	(1,000.6)	(1,420.9)
Discontinued Operations			
Cash provided by operating activities	**0.6**	59.6	6.7
Cash provided by investing activities	**—**	—	—
Cash provided by financing activities	**—**	—	—
Cash Provided by Discontinued Operations	**0.6**	59.6	6.7
Effect of Exchange Rate Changes on Cash	**6.5**	(130.3)	27.8
Decrease in cash and cash items	**(1,094.0)**	(1,757.9)	(784.1)
Cash and Cash items – Beginning of Year	**2,711.0**	4,468.9	5,253.0
Cash and Cash Items – End of Period	**$1,617.0**	$2,711.0	$4,468.9

The accompanying notes are an integral part of these statements.

Air Products and Chemicals, Inc. and Subsidiaries
CONSOLIDATED STATEMENTS OF EQUITY
For the Fiscal Years Ended 30 September

(Millions of U.S. 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 as of 30 September 2020	**$249.4**	**$1,094.8**	**$14,875.7**	**($2,140.1)**	**($2,000.0)**	**$12,079.8**	**$363.3**	**$12,443.1**
Net income	—	—	2,099.1	—	—	2,099.1	15.8	2,114.9
Other comprehensive income (loss)	—	—	—	624.2	—	624.2	38.8	663.0
Dividends on common stock (per share $5.84)	—	—	(1,292.6)	—	—	(1,292.6)	—	(1,292.6)
Distributions to noncontrolling interests	—	—	—	—	—	—	(5.3)	(5.3)
Share-based compensation	—	43.5	—	—	—	43.5	—	43.5
Issuance of treasury shares for stock option and award plans	—	(21.5)	—	—	12.1	(9.4)	—	(9.4)
Investments by noncontrolling interests	—	—	—	—	—	—	139.8	139.8
Purchase of noncontrolling interests	—	(1.2)	—	—	—	(1.2)	(4.1)	(5.3)
Other equity transactions	—	0.2	(3.9)	—	—	(3.7)	—	(3.7)
Balance as of 30 September 2021	**$249.4**	**$1,115.8**	**$15,678.3**	**($1,515.9)**	**($1,987.9)**	**$13,539.7**	**$548.3**	**$14,088.0**
Net income	—	—	2,256.1	—	—	2,256.1	10.4	2,266.5
Other comprehensive income (loss)	—	—	—	(1,270.2)	—	(1,270.2)	(29.3)	(1,299.5)
Dividends on common stock (per share $6.36)	—	—	(1,410.6)	—	—	(1,410.6)	—	(1,410.6)
Distributions to noncontrolling interests	—	—	—	—	—	—	(4.8)	(4.8)
Share-based compensation	—	46.0	—	—	—	46.0	—	46.0
Issuance of treasury shares for stock option and award plans	—	(20.9)	—	—	6.9	(14.0)	—	(14.0)
Investments by noncontrolling interests	—	—	—	—	—	—	33.0	33.0
Purchase of noncontrolling interests	—	—	—	—	—	—	(1.9)	(1.9)
Other equity transactions	—	0.5	(3.5)	—	—	(3.0)	2.7	(0.3)
Balance as of 30 September 2022	**$249.4**	**$1,141.4**	**$16,520.3**	**($2,786.1)**	**($1,981.0)**	**$13,144.0**	**$558.4**	**$13,702.4**
Net income	—	—	2,300.2	—	—	2,300.2	38.4	2,338.6
Other comprehensive income (loss)	—	—	—	336.7	—	336.7	184.3	521.0
Dividends on common stock (per share $6.87)	—	—	(1,526.2)	—	—	(1,526.2)	—	(1,526.2)
Distributions to noncontrolling interests	—	—	—	—	—	—	(115.9)	(115.9)
Share-based compensation	—	54.6	—	—	—	54.6	—	54.6
Issuance of treasury shares for stock option and award plans	—	(6.1)	—	—	13.7	7.6	—	7.6
Investments by noncontrolling interests[A]	—	—	—	—	—	—	682.2	682.2
Other equity transactions	—	0.6	(4.6)	—	—	(4.0)	—	(4.0)
Balance as of 30 September 2023	**$249.4**	**$1,190.5**	**$17,289.7**	**($2,449.4)**	**($1,967.3)**	**$14,312.9**	**$1,347.4**	**$15,660.3**

[A] Includes noncash activity related to the NEOM Green Hydrogen Company joint venture. Refer to Note 3, *Variable Interest Entities*, for additional information.

The accompanying notes are an integral part of these statements.

Air Products and Chemicals, Inc. and Subsidiaries
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS
(Millions of U.S. Dollars unless otherwise indicated, except for share and per share data)

1. BASIS OF PRESENTATION AND MAJOR ACCOUNTING POLICIES

As used in this report, unless the context indicates otherwise, the terms “we,” “our,” “us,” the “Company,” "Air Products," or “registrant” include our controlled subsidiaries and affiliates.

About Air Products

Air Products, a Delaware corporation originally founded in 1940, is a world-leading industrial gases company. Focused on energy, environmental, and emerging markets, Air Products' core business provides a portfolio of products, and services that include atmospheric gases, process and specialty gases, equipment, and related services to customers in dozens of industries. Air Products also develops, engineers, builds, owns, and operates some of the world's largest industrial gas and carbon-capture projects, supplying world-scale clean hydrogen that will support the world's transition to lower carbon energy, particularly in the global transportation, and industrial markets. Air Products trades on the New York Stock Exchange under the symbol "APD."

Air Products manages and reports its operating results through five reportable segments: Americas, Asia, Europe, Middle East and India, and Corporate and other. Refer to Note 25, *Business Segment and Geographic Information*, for additional information.

Basis of Presentation

The accompanying consolidated financial statements were prepared in accordance with accounting principles generally accepted in the United States of America (“GAAP”) and include the accounts of Air Products and Chemicals, Inc. and those of its controlled subsidiaries. The notes that follow are an integral part of our consolidated financial statements. These notes, unless otherwise indicated, are presented on a continuing operations basis. Intercompany transactions and balances are eliminated in consolidation.

Discontinued Operations

The results of operations and cash flows for our discontinued operations have been segregated from the results of continuing operations and segment results. The comprehensive income related to discontinued operations has not been segregated and is included in the consolidated comprehensive income statements. There were no assets and liabilities presented as discontinued operations on our consolidated balance sheets. Refer to Note 7, *Discontinued Operations*, for additional information.

Estimates and Assumptions

Preparation of the consolidated financial statements in conformity with GAAP requires management to make estimates and assumptions that affect amounts reported in the consolidated financial statements and the accompanying notes. Actual results could differ from those estimates.

Reclassifications

Certain prior year information has been reclassified to conform to the fiscal year 2023 presentation. For example, beginning in the first quarter of fiscal year 2023, we present "Operating lease right-of-use assets, net" and "Noncurrent operating lease liabilities" in separate captions on our consolidated balance sheets. These balances were previously presented within "Other noncurrent assets" and "Other noncurrent liabilities," respectively.

Consolidation Principles

We consolidate all entities we control under either the voting interest model, which generally applies when we hold a majority of the voting interest of an entity, or the variable interest model, which applies to arrangements for which we are the primary beneficiary of a variable interest entity ("VIE"). For consolidated subsidiaries in which our ownership is less than 100%, the outside shareholders’ interests are reflected as non-controlling interests on our consolidated financial statements.

We are considered the primary beneficiary of a VIE when we have both the power to direct the activities that most significantly impact the economic performance of the VIE and the obligation to absorb losses or the right to receive benefits that could potentially be significant to the VIE. We are the primary beneficiary of the NEOM Green Hydrogen Company and consolidate the joint venture within our Middle East and India segment. For additional information, refer to Note 3, *Variable Interest Entities*. We are not the primary beneficiary of any other material VIEs.

We account for a VIE for which we exercise significant influence but are not the primary beneficiary, such as the Jazan Integrated Gasification and Power Company joint venture, as an equity method investment. For additional information on this joint venture, refer to Note 9, *Equity Affiliates*.

Revenue Recognition

We recognize 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.

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 6, *Revenue Recognition*.

Cost of Sales

Cost of sales predominantly represents the cost of tangible products sold. These costs include labor, raw materials, plant engineering, power, depreciation, production supplies and materials packaging costs, and maintenance costs. Costs incurred for shipping and handling are also included in cost of sales.

Depreciation

Depreciation is recorded using the straight-line method, which deducts equal amounts of the cost of each asset from earnings every year over its expected economic useful life. The principal lives for major classes of plant and equipment are summarized in Note 10, *Plant and Equipment, net*.

Selling and Administrative Expense

The principal components of selling and administrative expense are costs related to compensation, administrative functions, and professional fees.

Postemployment Benefits

We provide ongoing benefit arrangements that provide nonretirement postemployment benefits such as severance and outplacement services to involuntarily terminated employees. We record a liability for these benefits when we determine it is probable that the benefits will be paid in an amount that can be reasonably estimated. These criteria are met when management, with the appropriate level of authority, approves and commits to a termination plan that identifies impacted employees and their related benefits and is expected to be substantially completed within one year. We do not provide material one-time benefit arrangements.

Fair Value Measurements

We are required to measure certain assets and liabilities at fair value, either upon initial measurement or for subsequent accounting or reporting. For example, fair value is used in the initial measurement of assets and liabilities acquired in a business combination; on a recurring basis in the measurement of derivative financial instruments; and on a nonrecurring basis when long-lived assets are written down to fair value when held for sale or determined to be impaired. Refer to Note 15, *Fair Value Measurements*, and Note 17, *Retirement Benefits*, for information on the methods and assumptions used in our fair value measurements.

Financial Instruments

We address certain financial exposures through a controlled program of risk management that includes the use of derivative financial instruments. The types of derivative financial instruments permitted for such risk management programs are specified in policies set by management. Refer to Note 14, *Financial Instruments*, for further detail on the types and use of derivative instruments into which we enter.

Major financial institutions are counterparties to all of these derivative contracts. We have established counterparty credit guidelines and generally enter into transactions with financial institutions of investment grade or better. Management believes the risk of incurring losses related to credit risk is remote, and any losses would be immaterial to the consolidated financial results, financial condition, or liquidity.

We recognize derivatives on the balance sheet at fair value. On the date the derivative instrument is entered into, we generally designate the derivative as either (1) a hedge of a forecasted transaction or of the variability of cash flows to be received or paid related to a recognized asset or liability (cash flow hedge), (2) a hedge of a net investment in a foreign operation (net investment hedge), or (3) a hedge of the fair value of a recognized asset or liability (fair value hedge).

The following details the accounting treatment of our cash flow, fair value, net investment, and non-designated hedges:

- Changes in the fair value of a derivative that is designated as and meets the cash flow hedge criteria are recorded in accumulated other comprehensive loss ("AOCL") to the extent effective and then recognized in earnings when the hedged items affect earnings.
- Changes in the fair value of a derivative that is designated as and meets all the required criteria for a fair value hedge, along with the gain or loss on the hedged asset or liability that is attributable to the hedged risk, are recorded in current period earnings.
- Changes in the fair value of a derivative and foreign currency debt that are designated as and meet all the required criteria for a hedge of a net investment are recorded as translation adjustments in AOCL.
- Changes in the fair value of a derivative that is not designated as a hedge are recorded immediately in earnings.

We formally document the relationships between hedging instruments and hedged items, as well as our risk management objective and strategy for undertaking various hedge transactions. This process includes relating derivatives that are designated as fair value or cash flow hedges to specific assets and liabilities on the balance sheet or to specific firm commitments or forecasted transactions. We also formally assess, at the inception of the hedge and on an ongoing basis, whether derivatives are highly effective in offsetting changes in fair values or cash flows of the hedged item. If it is determined that a derivative is not highly effective as a hedge, or if a derivative ceases to be a highly effective hedge, we will discontinue hedge accounting with respect to that derivative prospectively.

Foreign Currency

Since we do business in many foreign countries, fluctuations in currency exchange rates affect our financial position and results of operations.

In most of our foreign operations, the local currency is considered the functional currency. Foreign subsidiaries translate their assets and liabilities into U.S. dollars at current exchange rates in effect as of the balance sheet date. The gains or losses that result from this process are shown as translation adjustments in AOCL in the equity section of the balance sheet.

The revenue and expense accounts of foreign subsidiaries are translated into U.S. dollars at the average exchange rates that prevail during the period. Therefore, the U.S. dollar value of these items on the consolidated income statements fluctuates from period to period, depending on the value of the U.S. dollar against foreign currencies. Some transactions are made in currencies different from an entity’s functional currency. Gains and losses from these foreign currency transactions, and the impact of related hedges, are generally reflected in "Other income (expense), net" on our consolidated income statements as they occur and were not material for the periods presented.

Foreign exchange gains and losses from the foreign currency remeasurement of balances associated with intercompany and third-party financing transactions, related income tax assets and liabilities, and the impact of related hedges are reflected within “Other non-operating income (expense), net" and were not material for the periods presented.

In addition, foreign currency forward points and currency swap basis differences that are excluded from the assessment of hedge effectiveness of our cash flow hedges of intercompany loans (“excluded components”) are recorded within “Other non-operating income (expense), net" on a straight-line basis. Excluded components were expenses of $25.1, $23.2, and $31.0 in fiscal years 2023, 2022, and 2021, respectively.

Government Assistance

We receive, or expect to receive in the future, various types of government assistance, primarily in the form of grants or refundable tax credits. Government assistance is recognized when there is reasonable assurance that we have complied with relevant conditions and the assistance will be received. Government assistance is recognized in the consolidated income statements on a systematic basis over the periods in which we recognize the related costs for which the government assistance is intended to compensate. Government assistance related to assets is included in the balance sheet as a reduction of the cost of the asset and results in reduced depreciation expense over the useful life of the asset. Government assistance that relates to expenses is recognized in the income statement as a reduction of the related expense or as a component of other income (expense), net. Government assistance did not have a material impact on our financial statements in fiscal year 2023.

Environmental Expenditures

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. Remediation costs are capitalized if the costs improve our property as compared with the condition of the property when originally constructed or acquired, or if the costs prevent environmental contamination from future operations. We expense environmental costs related to existing conditions resulting from past or current operations and from which no current or future benefit is discernible. The amounts charged to income from continuing operations related to environmental matters totaled $24.9, $22.3, and $18.6 in fiscal years 2023, 2022, and 2021, respectively.

The measurement of environmental liabilities is based on an evaluation of currently available information with respect to each individual site and considers factors such as existing technology, presently enacted laws and regulations, and prior experience in remediation of contaminated sites. An environmental liability related to cleanup of a contaminated site might include, for example, a provision for one or more of the following types of costs: site investigation and testing costs, remediation costs, post-remediation monitoring costs, natural resource damages, and outside legal fees. These liabilities include costs related to other potentially responsible parties to the extent that we have reason to believe such parties will not fully pay their proportionate share. They do not consider any claims for recoveries from insurance or other parties and are not discounted.

As assessments and remediation progress at individual sites, the amount of projected cost is reviewed, and the liability is adjusted to reflect additional technical and legal information that becomes available. Management has an established process in place to identify and monitor our environmental exposures. An environmental accrual analysis is prepared and maintained that lists all environmental loss contingencies, even where an accrual has not been established. This analysis assists in monitoring our overall environmental exposure and serves as a tool to facilitate ongoing communication among our technical experts, environmental managers, environmental lawyers, and financial management to ensure that required accruals are recorded and potential exposures disclosed.

Due to inherent uncertainties involved in evaluating environmental exposures, actual costs to be incurred at identified sites in future periods may vary from the estimates. Refer to Note 18, *Commitments and Contingencies*, for additional information on our environmental loss contingencies.

The accruals for environmental liabilities are reflected in the consolidated balance sheets, primarily as part of other noncurrent liabilities.

Litigation

In the normal course of business, we are involved in legal proceedings. We accrue a liability for such matters when it is probable that a liability has been incurred and the amount of loss can be reasonably estimated. When only a range of possible loss can be established, the most probable amount in the range is accrued. If no amount within this range is a better estimate than any other amount within the range, the minimum amount in the range is accrued. The accrual for a litigation loss contingency includes estimates of potential damages and other directly related costs expected to be incurred. Refer to Note 18, *Commitments and Contingencies*, for additional information on our current legal proceedings.

Share-Based Compensation

We expense the grant-date fair value of our share-based awards over the vesting period during which employees perform related services. Expense recognition is accelerated for retirement-eligible individuals who would meet the requirements for vesting of awards upon their retirement. Refer to Note 20, *Share-Based Compensation*, for additional information regarding our awards, including the models and assumptions used to determine their grant-date fair value.

Income Taxes

We account for income taxes under the asset and liability method. Under this method, deferred tax assets and liabilities are recognized for the tax effects of temporary differences between the financial reporting and tax bases of assets and liabilities using enacted tax rates in effect for the year in which the differences are expected to be recovered or settled. A principal temporary difference results from the excess of tax depreciation over book depreciation because accelerated methods of depreciation and shorter useful lives are used for income tax purposes. The cumulative impact of a change in tax rates or regulations is included in income tax expense in the period that includes the enactment date. We recognize deferred tax assets net of existing valuation allowances to the extent we believe that these assets are more likely than not to be realized considering all available evidence.

A tax benefit for an uncertain tax position is recognized when it is more likely than not that the position will be sustained upon examination based on its technical merits. This position is measured as the largest amount of tax benefit that is greater than 50% likely of being realized. Interest and penalties related to unrecognized tax benefits are recognized as a component of income tax expense.

We have elected as an accounting policy to account for Global Intangible Low Tax Income (“GILTI”) as a period cost when incurred.

For additional information regarding our income taxes, refer to Note 23, *Income Taxes*.

Other Non-Operating Income (Expense), net

"Other non-operating income (expense), net" includes interest income associated with our cash and cash items and short-term investments, certain foreign currency remeasurements and impacts from the related hedging activities discussed in the *Foreign Currency* section above, and non-service cost components of net periodic pension and postretirement benefit cost. Our non-service costs primarily include interest cost, expected return on plan assets, amortization of actuarial gains and losses, and settlements.

Cash and Cash Items

"Cash and cash items" include cash, time deposits, and treasury securities acquired with an original maturity of three months or less.

Short-term Investments

"Short-term investments" include time deposits and treasury securities with original maturities greater than three months and less than one year.

Credit Losses

We are exposed to credit losses primarily through sales of products and services. When extending credit, we evaluate customer creditworthiness based on a combination of qualitative and quantitative factors that include, but are not limited to, the customer’s credit score from external providers, financial condition, and past payment experience.

We assess allowances for credit losses on our trade receivables, lease receivable, and financing receivable portfolios. Allowances are evaluated by portfolio on a collective basis where similar characteristics exist. A provision for customer defaults is made on a general formula basis as the risk of some default is expected but cannot yet be associated with specific customers. The assessment of the likelihood of default is based on various factors, including the length of time the receivables are past due, historical experience, existing economic conditions, and forward-looking information. When we identify specific customers with known collectability issues, the assessment for credit losses is performed on an individual basis, considering current and forward-looking information of the customer. We also consider variables that may mitigate the inherent credit risk of a particular transaction, such as the estimated fair value of the collateral, whether by use or sale.

The use of forward-looking information considers economic conditions that may affect the customers' ability to pay. Although we historically have not experienced significant credit losses, our exposure to credit losses may increase if our customers are adversely affected by economic pressures or uncertainty associated with local or global economic recessions, or other customer-specific factors. We review our reserves for credit losses on a quarterly basis.

Trade receivables comprise amounts owed to us through our operating activities and are presented net of allowances for credit losses. Changes to the carrying amount of the allowance for credit losses on trade receivables are summarized below:

Balance at 30 September 2020	$23.9
Adoption of new credit losses standard	0.5
Provision for credit losses	2.7
Write-offs charged against the allowance	(3.8)
Currency translation and other	1.8
Balance at 30 September 2021	$25.1
Provision for credit losses	7.5
Write-offs charged against the allowance	(7.9)
Currency translation and other	(0.6)
Balance at 30 September 2022	$24.1
Provision for credit losses	8.2
Write-offs charged against the allowance	(7.9)
Currency translation and other	(1.5)
Balance at 30 September 2023	**$22.9**

In addition, our lease receivables and financing receivables are presented net of allowances for credit losses. As of 30 September 2023 and 2022, the credit quality of lease receivables and financing receivables did not require a material allowance for credit losses. For additional information on our lease arrangements, refer to Note 13, *Leases*.

Inventories

We carry inventory that is comprised of finished goods, work-in-process, raw materials and supplies. Refer to Note 8, *Inventories*, for further detail.

Inventories on our consolidated balance sheets are stated at the lower of cost or net realizable value. We determine the cost of all our inventories on a first-in, first-out basis ("FIFO"). We write down our inventories for estimated obsolescence or unmarketable inventory based upon assumptions about future demand and market conditions.

Equity Method Investments

We apply the equity method of accounting when we have the ability to exercise significant influence but do not control the operating and financial decisions of an investee, which generally applies when our ownership interest in common stock or in-substance common stock of the investee is between 20% and 50%. Under the equity method, we initially record our investment at cost and subsequently adjust the investment to recognize our share of net earnings or losses, distributions received, and other-than-temporary impairments. The carrying value of our equity method investments is reflected as "Investment in net assets of and advances to equity affiliates" on our consolidated balance sheets. We use the cumulative earnings approach for determining cash flow presentation of cash distributions received from equity method investees. Equity investments are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of the investment may not be recoverable.

Our share of the investee's net earnings is primarily presented net of income taxes within "Equity affiliates' income" on our consolidated income statements. Profits or losses related to intra-entity sales with our equity method investees are eliminated consistent with our ownership percentage in the entity until realized by the investee through a transaction with a third party. In addition, "Equity affiliates' income" includes interest income from shareholder loans viewed as in-substance common stock.

Plant and Equipment, net

Plant and equipment, net is stated at cost less accumulated depreciation. Construction costs, labor, and applicable overhead related to installations are capitalized. Expenditures for additions and improvements that extend the lives or increase the capacity of plant assets are capitalized. The costs of maintenance and repairs of plant and equipment are expensed as incurred.

Fully depreciated assets are retained in the gross plant and equipment and accumulated depreciation accounts until they are removed from service. In the case of disposals, assets and related accumulated depreciation are removed from the accounts, and the net amounts, less proceeds from disposal, are included in income. Refer to Note 10, *Plant and Equipment, net*, for further detail.

Computer Software

We capitalize costs incurred to purchase or develop software for internal use. Capitalized costs include purchased computer software packages, payments to vendors/consultants for development and implementation or modification to a purchased package to meet our requirements, payroll and related costs for employees directly involved in development, and interest incurred while software is being developed. Capitalized costs are reflected in "Plant and equipment, net" on the consolidated balance sheets and are depreciated over the estimated useful life of the software, generally a period of three to five years.

We capitalize costs incurred with the implementation of a cloud computing arrangement that is a service contract, consistent with our policy for software developed or obtained for internal use. However, the capitalized costs are reflected in "Other noncurrent assets" on our consolidated balance sheets and expensed over the term of the related hosting arrangement.

Leases as Lessee

As lessee, we recognize a right-of-use ("ROU") asset and lease liability on the balance sheet for all leases with terms in excess of 12 months. We evaluate whether an arrangement contains a lease at inception by determining whether there is an identifiable asset, we obtain substantially all the economic benefits from that asset, and we direct how and for what purpose the asset is used during the term of the arrangement. We apply a practical expedient to exclude arrangements with initial terms of 12 months or less from our balance sheet.

ROU assets represent our right to use an underlying asset for the lease term and lease liabilities represent our obligation to make lease payments arising from the lease. ROU assets and lease liabilities are recognized at the commencement date based on the present value of lease payments over the lease term. Since our leases generally do not provide an implicit discount rate, we use our incremental borrowing rates based on the information available at the commencement date in determining the present value of lease payments. To determine the incremental borrowing rate, we consider our unsecured borrowings and published market rates, and then adjust those rates to assume full collateralization and to factor in the individual lease term, geography, and payment structure.

Our lease term includes periods covered by options to extend or terminate the lease when it is reasonably certain that we will exercise an option to extend or not exercise an option to terminate. Lease payments consider our practical expedient to combine amounts for lease and related non-lease components for all classes of underlying assets in which we are lessee. Fixed payments and payments associated with escalation clauses based on an index are included in the ROU asset and lease liability at commencement. Variable lease payments are excluded from the ROU assets and lease liabilities and are recognized in the period in which the obligation for those payments is incurred. Our variable lease payments primarily include the impact from escalation clauses that are not fixed or based on an index. Prepaid lease payments are included in the recognition of ROU assets. Our lease agreements do not contain any material lease incentives, residual value guarantees or restrictions or covenants.

Leases as Lessor

Certain contracts associated with facilities that are built to provide product to a specific customer are accounted for as containing embedded leases. Our lease receivables are primarily long-term in nature and relate to sales-type leases on certain on-site assets for which payments are collected over the contract term. Revenue representing interest income from the financing component of the lease receivable is reflected as sales over the life of the contract.

In cases for which operating lease treatment is appropriate, there is no difference in revenue recognition over the life of the contract as compared to accounting for the contract under a sale of gas agreement. These contracts qualify for a practical expedient available to lessors to combine the lease and non-lease components and account for the combined component in accordance with the accounting treatment for the predominant component. We elected to apply this practical expedient and have accounted for the combined component as product sales under the revenue standard as we control the operations and maintenance of the assets that provide the supply of gas to our customers.

As we generally control the operations and maintenance of the assets that provide the supply of gas to our customers, there have been no new arrangements that qualified as a lease in fiscal year 2023.

Financing Receivables

Some of our acquisitions include terms that provide the seller with both the right to receive all output from the acquired asset for an agreed upon term as well as the right to reacquire the asset at a future date. In these instances, we evaluate the contract terms to determine whether we have obtained control of the underlying asset, or the transaction qualifies as a financing arrangement. For transactions that qualify as financing arrangements, we record our investment as a financing receivable, net of any allowances for credit losses, on our consolidated balance sheets. We then recognize a portion of the payments received as a reduction to the financing receivable. Related interest income is presented within “Sales” on our consolidated income statements with revenue received to operate the plant. Interest income on our financing receivables was not material in fiscal year 2023.

Impairment of Long-Lived Assets

Long-lived assets are grouped for impairment testing at the lowest level for which there are identifiable cash flows that are largely independent of the cash flows of other assets and liabilities. Long-lived assets are evaluated for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset group may not be recoverable. We assess recoverability by comparing the carrying amount of the asset group to estimated undiscounted future cash flows expected to be generated by the asset group. If an asset group is considered impaired, the impairment loss to be recognized is measured as the amount by which the asset group’s carrying amount exceeds its fair value. Long-lived assets meeting the held for sale criteria are reported at the lower of carrying amount or fair value less cost to sell.

Asset Retirement Obligations

The fair value of a liability for an asset retirement obligation is recognized in the period in which it is incurred. The fair value of the liability is measured using discounted estimated cash flows and is adjusted to its present value in subsequent periods as accretion expense is recorded. The corresponding asset retirement costs are capitalized as part of the carrying amount of the related long-lived asset and depreciated over the asset’s useful life. Our asset retirement obligations are primarily associated with on-site long-term supply contracts under which we have built a facility on land owned by the customer and are obligated to remove the facility at the end of the contract term. Our asset retirement obligations totaled $297.3 and $274.7 at 30 September 2023 and 2022, respectively. Refer to Note 18, *Commitments and Contingencies*, for further detail.

Goodwill

Business combinations are accounted for using the acquisition method. The purchase price is allocated to the assets acquired and liabilities assumed based on their estimated fair values. Any excess purchase price (plus the fair value of any noncontrolling interest and previously held equity interest in the acquiree) over the fair market value of the net assets acquired, including identified intangibles, is recorded as goodwill. Preliminary purchase price allocations are made at the date of acquisition and finalized when information about facts and circumstances that existed as of the acquisition date needed to finalize underlying estimates is obtained or when we determine that such information is not obtainable, within a maximum measurement period of one year.

Goodwill is subject to impairment testing at least annually. In addition, goodwill is tested more frequently if a change in circumstances or the occurrence of events indicates that potential impairment exists. Refer to Note 11, *Goodwill*, for further detail.

Intangible Assets

Intangible assets with determinable lives primarily consist of customer relationships, purchased patents and technology, and certain land use rights. The cost of intangible assets with determinable lives is amortized on a straight-line basis over the estimated period of economic benefit. No residual value is estimated for these intangible assets. Indefinite-lived intangible assets consist of trade names and trademarks. Indefinite-lived intangibles are subject to impairment testing at least annually. In addition, intangible assets are tested more frequently if a change in circumstances or the occurrence of events indicates that potential impairment exists.

Customer relationships are generally amortized over periods of five to 25 years. Purchased patents and technology and other finite-lived intangibles are generally amortized over periods of five to 15 years. Other intangibles includes certain land use rights, which are generally amortized over a period of 50 years. Amortizable lives are adjusted whenever there is a change in the estimated period of economic benefit. Refer to Note 12, *Intangible Assets*, for further detail.

Retirement Benefits

Our retirement benefit plans are discussed in Note 17, *Retirement Benefits*. The cost of benefits we contribute to defined contribution plans is recognized in the year earned. The cost of benefits under our defined benefit and other post-retirement plans is generally recognized over the employees' service period. We use actuarial methods and assumptions in the valuation of defined benefit obligations and the determination of expense. Differences between actual and expected results or changes in the value of obligations and plan assets are recognized systematically over subsequent periods.

2. NEW ACCOUNTING GUIDANCE

Accounting Guidance Implemented in Fiscal Year 2023

Government Assistance

In November 2021, the Financial Accounting Standards Board ("FASB") issued disclosure guidance to increase the transparency of transactions an entity has with a government that are accounted for by applying a grant or contribution accounting model. We adopted the annual disclosure guidance on a prospective basis in fiscal year 2023. Refer to Note 1, Basis of Presentation and Major Accounting Policies, for additional information.

Reference Rate Reform

In March 2020, the FASB issued an update to provide practical expedients and exceptions for applying GAAP to contracts, hedging relationships and other transactions affected by reference rate reform if certain criteria are met. This update is primarily applicable to our contracts and hedging relationships that reference the London Inter-Bank Offered Rate ("LIBOR"). In December 2022, the FASB extended the date through which the amendments may be applied to impacted contracts and hedges to 31 December 2024. In fiscal year 2023, we amended our remaining interest rate swaps that referenced LIBOR to use a daily compounded Secured Overnight Financing Rate ("SOFR"). There were no financial statement impacts from the amendment.

3. VARIABLE INTEREST ENTITIES

We are the primary beneficiary of the NEOM Green Hydrogen Company joint venture ("NGHC"), which is a variable interest entity ("VIE") that is consolidated in our Middle East and India segment. We are not the primary beneficiary of any other material VIEs. We account for a VIE for which we exercise significant influence but are not the primary beneficiary, such as the Jazan Integrated Gasification and Power Company joint venture ("JIGPC"), as an equity method investment. For additional information on JIGPC, refer to Note 9, *Equity Affiliates*.

The table below summarizes balances associated with NGHC as reflected on our consolidated balance sheets. For additional information on this joint venture, refer to the "NEOM Green Hydrogen Project" section that follows.

	30 September 2023	30 September 2022
Assets		
Cash and cash items	$78.2	$274.7
Trade receivables, net	—	1.3
Prepaid expenses	21.4	0.1
Other receivables and current assets	181.6	23.3
Total current assets	**$281.2**	**$299.4**
Plant and equipment, net	1,396.1	218.8
Operating lease right-of-use assets, net	228.9	—
Other noncurrent assets	350.6	1.5
Total noncurrent assets	**$1,975.6**	**$220.3**
Total assets	**$2,256.8**	**$519.7**
Liabilities		
Payables and accrued liabilities	$141.0	$58.1
Accrued income taxes	0.6	—
Total current liabilities	**$141.6**	**$58.1**
Long-term debt	1,274.4	—
Long-term debt – related party[(A)]	—	447.3
Noncurrent operating lease liabilities	18.9	—
Other noncurrent liabilities	2.1	1.4
Deferred income taxes	24.1	—
Total noncurrent liabilities	**$1,319.5**	**$448.7**
Total liabilities	**$1,461.1**	**$506.8**
Equity		
Accumulated other comprehensive income	$77.7	$—
Noncontrolling interests[(A)]	723.6	30.0

[(A)] During the third quarter of fiscal year 2023, outstanding shareholder loans to NGHC were converted to equity in the entity. Accordingly, related party debt outstanding was reclassified to investments attributable to the noncontrolling partners of NGHC. This noncash activity is presented within “Investments by noncontrolling interests” on our consolidated statements of equity for the fiscal year ended 30 September 2023.

NEOM Green Hydrogen Project

In the fourth quarter of fiscal year 2020, we announced the NEOM Green Hydrogen Project (the "NEOM project"), a multi-billion dollar green hydrogen-based ammonia production facility that will be powered by renewable energy in NEOM City, Saudi Arabia. We, along with our joint venture partners, ACWA Power and NEOM Company, are equal owners in NGHC, which will develop, construct, own, operate, and finance the project.

During the third quarter of fiscal year 2022, we entered into an interim agreement with NGHC under which we commenced construction of the NEOM project. In addition, we executed an agreement with NGHC under which we will be the exclusive offtaker of green ammonia produced by the NEOM project under a long-term take-if-tendered agreement. We intend to transport the green ammonia around the world to be dissociated to produce green hydrogen for transportation and industrial markets. In May 2023, NGHC finalized the $6.7 billion engineering, procurement, and construction ("EPC") agreement with Air Products named as the main contractor and system integrator for the facility. As of 30 September 2023, we had unconditional purchase obligations of approximately $5 billion for open purchase orders related to construction of the project.

Air Products has one-third of the voting interests in the NGHC joint venture; however, substantially all the activities of the joint venture involve or are conducted on behalf of Air Products. Since we have disproportionately few voting rights relative to our economic interests in the joint venture, we determined that NGHC is a variable interest entity. In addition, we determined that we are the primary beneficiary of NGHC since we have the power to unilaterally direct certain significant activities, including key design and construction decisions, and we share power with our joint venture partners related to other activities that are significant to the economic performance of NGHC. Therefore, we consolidate NGHC within the Middle East and India segment.

Project Financing

In May 2023, NGHC secured non-recourse project financing of approximately $6.1 billion, which is expected to fund about 73% of the project and will be drawn over the construction period. At the same time, NGHC secured additional non-recourse credit facilities totaling approximately $500 primarily for working capital needs. Under the financing, the assets of NGHC can only be used to settle obligations of the joint venture, and creditors of NGHC do not have recourse to the general credit of Air Products.

The joint venture completed its first drawdown on the project financing in July 2023. The table below summarizes the interest rate, maturity, and carrying amount of borrowings associated with NGHC as of 30 September 2023:

	Fiscal Year Maturities	**30 September 2023**
Payable in U.S. Dollars		
U.S. Dollar variable-rate facilities 6.62%[(A)]	2027 to 2053	$1,094.9
U.S. Dollar stated-rate facility 5.00%	2027 to 2053	138.5
Total Payable in U.S. Dollars		$1,233.4
Payable in Other Currencies		
Saudi Riyal Loan Facility variable-rate 6.69%[(B)]	2027	131.4
Total Principal Amount		$1,364.8
Less: Unamortized discount and debt issuance costs[(C)]		(90.4)
Total NGHC Long-term Debt		$1,274.4

(A) Reflects a daily compounded SOFR as of 30 September 2023 plus an annual margin of 1.31%. This does not include the impact of our floating-to-fixed interest rate swaps, which result in an overall lower interest rate for the borrowings. These derivative instruments, which had a notional principal amount of $1,182.5 and an average pay rate of 2.82% as of 30 September 2023, are reflected within the table provided in Note 14, *Financial Instruments*, on page 85 .

(B) Based on the Saudi Arabian Interbank Offered Rate ("SAIBOR") plus an annual margin of 0.8%.

(C) Our consolidated balance sheet as of 30 September 2023 also includes $58.8 for remaining project financing fees that are eligible for deferral as a noncurrent asset until additional borrowings are drawn, at which time the unamortized balance will be reclassified as an offset to the outstanding debt.

Land Lease

The green hydrogen-based ammonia production facility is being constructed on land owned by our joint venture partner, NEOM Company, for which NGHC signed a 50-year lease agreement. The land lease commenced during the third quarter of fiscal year 2023. Accordingly, we recorded an operating lease with a right-of-use asset and corresponding liability of $223, of which $209 was paid as a lump-sum in August 2023. Additional payments under the lease will occur after the first 30 years of the lease term.

4. BUSINESS AND ASSET ACTIONS

The charges we record for business and asset actions are not recorded in segment results.

Fiscal Year 2023

Our consolidated income statement for the fiscal year ended 30 September 2023 includes an expense of $244.6 ($204.9 attributable to Air Products after tax) resulting from strategic business and asset actions intended to optimize costs and focus resources on our growth projects. Of the expense, $217.6 resulted from noncash charges to write off assets associated with exited projects that were previously under construction in our Asia and Europe segments. The assets written off included those related to our withdrawal from coal gasification in Indonesia as well as a project in Ukraine that was permanently suspended due to Russia's invasion of the country. The remaining expense includes $27.0 for severance and other benefits payable to approximately 450 employees due to position eliminations and restructuring of certain organizations globally. The table below summarizes the carrying amount of the accrual for unpaid benefits as of 30 September 2023, which we expect to substantially pay through fiscal year 2024.

Charge for severance and other benefits	$27.0
Cash expenditures	(6.8)
Currency translation adjustment	(0.4)
Amount reflected in "Payables and accrued liabilities" as of 30 September 2023	$19.8

Fiscal Year 2022

We divested our small industrial gas business in Russia due to Russia's invasion of Ukraine in the fourth quarter of fiscal year 2022. As a result, we recorded a noncash business and asset actions charge of $73.7, which included transaction costs and cumulative currency translation losses. Prior to the divestiture, this business was reflected in our Europe segment.

5. ACQUISITIONS

Fiscal Year 2023

Uzbekistan Asset Purchase

On 25 May 2023, we entered into an investment agreement with the Government of the Republic of Uzbekistan and Uzbekneftegaz JSC (“UNG”) to purchase a natural gas-to-syngas processing facility in Qashqadaryo Province, Uzbekistan, for $1 billion. Under the agreement, Air Products will acquire, own, and operate the facility and supply all offtake products to UNG under a 15-year on-site contract, with UNG supplying the feedstock natural gas and utilities.

We are accounting for the transaction as a financing arrangement because UNG has the right to reacquire the facility at the end of the contract term. Accordingly, progress payments of approximately $800, of which $600 was completed during fiscal year 2023, are reflected within "Financing Receivables" on our consolidated balance sheet as of 30 September 2023. The progress payments are reflected within “Investment in financing receivables” on our consolidated statement of cash flows. In early fiscal year 2024, we made an additional progress payment of $100.

Fiscal Year 2021

Gain on Exchange With Joint Venture Partner

We previously held a 50% ownership interest in Tyczka Industrie-Gases GmbH ("TIG"), a joint venture in Germany with the Tyczka Group that was primarily a merchant gases business. We accounted for this arrangement as an equity method investment in our former Industrial Gases – EMEA segment.

Effective 23 February 2021 (the "acquisition date"), TIG was separated into two businesses, one of which we acquired on a 100% basis. Our partner paid us $10.8 to acquire the other business. The exchange resulted in a gain of $36.8 ($27.3 after-tax), which is reflected as “Gain on exchange with joint venture partner” on our consolidated income statements for the fiscal year ended 30 September 2021. The gain included $12.7 from the revaluation of our previously held equity interest in the portion of the business that we retained and $24.1 from the sale of our equity interest in the remaining business. The gain was not recorded in segment results.

We estimated an acquisition date fair value of $15.4 for our previously held equity interest in the acquired portion of the business using a market approach, which considered historical earnings and the application of a market-based multiple derived from comparable transactions.

We accounted for the acquisition as a business combination. The results of this business are consolidated within our Europe segment.

6. REVENUE RECOGNITION

Nature of Goods and Services

The principal activities from which we generate sales from our contracts with customers 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*.

Regional Industrial Gases

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 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. We also deliver smaller quantities of product through small on-site plants (cryogenic or non-cryogenic generators), typically via 10- to 15-year sale of gas contracts. 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 we typically design and install 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 that are based on the customer's requirements. These contracts contain stated terms that are generally five 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.

Equipment

We design and manufacture equipment for air separation, hydrocarbon recovery and purification, natural gas liquefaction, and liquid helium and liquid hydrogen transport and storage. The Corporate and other segment serves 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 those for materials, labor, and overhead 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. In addition, 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. We recorded changes to project estimates that unfavorably impacted operating income by approximately $115, $30, and $19 in fiscal years 2023, 2022, and 2021, respectively.

Disaggregation of Revenue

The tables below present our consolidated sales disaggregated by supply mode for each of our reportable segments. We believe this presentation best depicts the nature, timing, type of customer, and contract terms for our sales.

	Americas	Asia	Europe	Middle East and India	Corporate and other	Total	%
2023							
On-site	$3,143.9	$1,923.0	$1,036.6	$75.7	$—	$6,179.2	49 %
Merchant	2,225.4	1,293.1	1,926.5	86.8	—	5,531.8	44 %
Sale of equipment	—	—	—	—	889.0	889.0	7 %
Total	**$5,369.3**	**$3,216.1**	**$2,963.1**	**$162.5**	**$889.0**	**$12,600.0**	**100 %**
2022							
On-site	$3,423.1	$1,833.9	$1,298.2	$77.9	$—	$6,633.1	52 %
Merchant	1,945.8	1,309.4	1,787.9	51.6	—	5,094.7	40 %
Sale of equipment	—	—	—	—	970.8	970.8	8 %
Total	**$5,368.9**	**$3,143.3**	**$3,086.1**	**$129.5**	**$970.8**	**$12,698.6**	**100 %**
2021							
On-site	$2,469.5	$1,718.8	$802.4	$70.7	$—	$5,061.4	49 %
Merchant	1,698.1	1,202.0	1,543.2	28.6	—	4,471.9	43 %
Sale of equipment	—	—	—	—	789.7	789.7	8 %
Total	**$4,167.6**	**$2,920.8**	**$2,345.6**	**$99.3**	**$789.7**	**$10,323.0**	**100 %**

Interest income associated with financing and lease arrangements accounted for less than 1% of our total consolidated sales in fiscal years 2023, 2022, and 2021.

Remaining Performance Obligations

As of 30 September 2023, the transaction price allocated to remaining performance obligations is estimated to be approximately $25 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 the next five years and the balance thereafter.

Our remaining performance obligations do not include (1) expected revenue associated with new on-site plants that are not yet on-stream; (2) consideration associated with contracts that have an expected duration of less than one year; and (3) variable consideration for which we recognize revenue at the amount to which we have the right to invoice, including energy cost pass-through to customers.

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 amended, terminated, or renewed contracts.

Contract Balances

The table below details balances arising from contracts with customers:

30 September	Balance Sheet Location	**2023**	2022
Assets			
Contract assets – current	Other receivables and current assets	**$124.7**	$69.0
Contract fulfillment costs – current	Other receivables and current assets	**89.0**	84.1
Liabilities			
Contract liabilities – current	Payables and accrued liabilities	**$413.0**	$439.1
Contract liabilities – noncurrent	Other noncurrent liabilities	**136.9**	67.2

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.

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.

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 September 2023 and 2022 were not material.

Contract liabilities include advanced payments or right to consideration prior to performance under the contract and are recognized as revenue when or as we perform. Increases to our current contract liabilities primarily relate to new sale of equipment projects as balances associated with our sale of gas contracts are generally related to fixed charges and are relatively consistent period over period. During the fiscal year ended 30 September 2023, we recognized sales of approximately $295 associated with sale of equipment contracts that were included within our contract liabilities balance as of 30 September 2022. 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.

7. DISCONTINUED OPERATIONS

Our consolidated income statements include income from discontinued operations, net of tax, of $7.4, $12.6, and $70.3 in fiscal years 2023, 2022, and 2021, respectively, primarily from the release of unrecognized tax benefits on uncertain tax positions for which the statute of limitations expired.

In fiscal year 2023, income from discontinued operations, net of tax, of $7.4 primarily resulted from a net tax benefit recorded in the fourth quarter upon release of tax liabilities for uncertain tax positions taken with respect to the sale of our former Performance Materials Division ("PMD"), which was completed in 2017. Additionally, our consolidated statement of cash flows for the fiscal year ended 30 September 2023 reflects cash provided by operating activities of discontinued operations of $0.6 from income tax refunds associated with the sale.

In fiscal year 2022, income from discontinued operations, net of tax, of $12.6 primarily resulted from a net tax benefit recorded in the fourth quarter upon release of tax liabilities for uncertain tax positions taken with respect to the sale of PMD. Additionally, our consolidated statement of cash flows for the fiscal year ended 30 September 2022 reflects cash provided by operating activities of discontinued operations of $59.6 primarily from income tax refunds associated with the sale.

In fiscal year 2021, income from discontinued operations, net of tax, of $70.3 included net tax benefits of $60.0 recorded upon release of tax liabilities for uncertain tax positions. Of this amount, we recorded $51.8 in the fourth quarter for liabilities associated with PMD and $8.2 in the third quarter for liabilities associated with our former Energy-from-Waste ("EfW") business. Additionally, we recorded a tax benefit of $10.3 in the first quarter of fiscal year 2021 primarily from the settlement of a state tax appeal related to the gain on the sale of PMD. Our consolidated statement of cash flows for the fiscal year ended 30 September 2021 reflects cash provided by operating activities of discontinued operations of $6.7 from cash received as part of the settlement.

8. INVENTORIES

The components of inventories are as follows:

30 September	**2023**	2022
Finished goods	**$211.6**	$162.0
Work in process	**28.4**	22.0
Raw materials, supplies, and other	**411.8**	330.2
Inventories	**$651.8**	$514.2

9. EQUITY AFFILIATES

"Investment in net assets of and advances to equity affiliates" on our consolidated balance sheets were $4,617.8 and $3,353.8 as of 30 September 2023 and 2022, respectively. Substantially all our equity method investments are foreign affiliates.

As of 30 September 2023, our equity affiliates were as follows:

Abdullah Hashim Industrial Gases & Equipment Co., Ltd. (25%);
Air Products South Africa (Proprietary) Limited (50%);
Bangkok Cogeneration Company Limited (49%);
Bangkok Industrial Gases Co., Ltd. (49%);
Chengdu Air & Gas Products Ltd. (50%);
Helios S.p.A. (49%);
INFRA Group (40%);
INOX Air Products Private Limited (50%);
Jazan Integrated Gasification and Power Company (51%);
Kulim Industrial Gases Sdn. Bhd. (50%);
Sapio Produzione Idrogeno Ossigeno S.r.l. (49%);
and principally, other industrial gas producers.

Dividends and other distributions received from equity affiliates were $344.3, $285.1, and $157.3 in fiscal years 2023, 2022, and 2021, respectively.

As of 30 September 2023 and 2022, the amount of investment in companies accounted for by the equity method included equity method goodwill of $41.3 and $44.6, respectively.

Summarized Financial Information

The summarized financial information presented below is on a combined 100% basis and has been compiled based on the financial statements of our equity affiliates.

30 September	2023	2022
Current assets	**$3,097.1**	$2,454.6
Noncurrent assets	**14,468.2**	9,805.6
Current liabilities	**1,145.7**	939.0
Noncurrent liabilities	**11,934.0**	7,713.5

Fiscal Year Ended 30 September	2023	2022	2021
Net sales[(A)]	**$5,192.9**	$4,124.4	$3,338.1
Gross profit	**2,465.5**	1,894.0	1,492.9
Operating income	**1,847.4**	1,320.1	962.2
Net income	**1,062.9**	895.1	646.0

[(A)] Includes financing revenue of $1,011.3, $674.6, and $134.9 in fiscal years 2023, 2022, and 2021, respectively. Financing revenue in fiscal years 2023 and 2022 primarily relates to the JIGPC joint venture discussed below.

Investment in Jazan Integrated Gasification and Power Company ("JIGPC")

During the first quarter of fiscal year 2022, we made an initial investment of $1.6 billion to acquire a 55% ownership interest in the Jazan Integrated Gasification and Power Company ("JIGPC") joint venture of which 4% is attributable to the noncontrolling partner of Air Products Qudra ("APQ"). During the second quarter of fiscal year 2023, we completed a second investment of $908, which did not change our ownership interest. Additional information on the JIGPC joint venture is provided below.

Our investments were made primarily in the form of shareholder loans that qualify as in-substance common stock in the joint venture and were executed to align with the timing of the joint venture's purchase of project assets. The amounts invested included approximately $130 and $73 received from the noncontrolling partner of APQ for the first and second investment, respectively. As of 30 September 2023, the carrying value of our investment in JIGPC, including amounts attributable to noncontrolling interests, totaled $2,862.2. We expect to complete a remaining investment of approximately $115 for additional assets to be purchased by the joint venture.

We determined JIGPC is a variable interest entity for which we are not the primary beneficiary as we do not have the power to direct the activities that are most significant to the economic performance of the joint venture. Instead, these activities, including plant dispatch, operating and maintenance decisions, budgeting, capital expenditures, and financing, require unanimous approval of the owners or are controlled by the customer. Since we have the ability to exercise significant influence in the joint venture, we accounted for our investment in JIGPC under the equity method within the Middle East and India segment beginning in the first quarter of fiscal year 2022. Our loss exposure is limited to our investment in the joint venture.

Certain shareholders receive a preferred cash distribution pursuant to the joint venture agreement, which specifies each shareholder's share of income after considering the amount of cash available for distribution. As such, the earnings attributable to Air Products may not be proportionate to our ownership interest in the venture.

JIGPC Joint Venture

JIGPC is a joint venture with Saudi Aramco Power Company (a subsidiary of Aramco), ACWA Power, and APQ in the Jazan Economic City, Saudi Arabia. On 27 September 2021, JIGPC signed definitive agreements for the acquisition of project assets from Aramco for $12 billion and entered into related project financing for the purchase of the project assets, which include power blocks, gasifiers, air separation units, syngas cleanup assets, and utilities, in multiple phases. The first phase was completed on 27 October 2021 for $7.39 billion, and the second phase was completed for $4.15 billion on 19 January 2023. We expect JIGPC to acquire additional assets totaling approximately $525. JIGPC will commission, operate, and maintain the project assets to supply electricity, steam, hydrogen, and utilities to Aramco's refinery and terminal complex under a 25-year agreement, which commenced in the first quarter of fiscal year 2022. JIGPC recorded financing receivables upon acquisition of the assets and recognizes financing income over the supply term.

Jazan Gas Project Company

Jazan Gas Project Company ("JGPC"), a previous joint venture between Air Products and ACWA Holding, had a 20-year agreement to supply oxygen and nitrogen to Aramco's oil refinery and power plant in Jazan. The parties terminated the supply agreement in October 2021, and JGPC sold its air separation units to Aramco. We initially sold these assets to JGPC and deferred profit proportionate to our 26% ownership in the joint venture. With the termination of the supply agreement and sale of the air separation units complete, we recognized the remaining deferred profit, net of other project finalization costs, in equity affiliates' income in the first quarter of fiscal year 2022. Additionally, our consolidated statement of cash flows for fiscal year 2022 includes a noncash adjustment of $94.4 to reduce the carrying value of our investment in JGPC to zero and remove an obligation to make equity contributions to JGPC under an equity bridge loan that was no longer required.

Equity Method Investment Impairment

During the fourth quarter of fiscal year 2022, we determined there was an other-than-temporary impairment in two small equity affiliates in the Asia segment. As a result, we recorded a noncash charge of $14.8 to write down the full carrying value of the investments. This charge is reflected on our consolidated income statements within "Equity affiliates' income" and was not recorded in segment results.

10. PLANT AND EQUIPMENT, NET

The major classes of plant and equipment are as follows:

30 September	Useful life	2023	2022
Land		**$320.8**	$266.7
Buildings	30 years	**1,543.7**	1,431.3
Production facilities[A]	10-20 years	**19,593.1**	18,000.5
Distribution and other machinery and equipment[B]	5-25 years	**5,129.6**	4,784.9
Construction in progress		**6,159.1**	3,676.7
Plant and equipment, at cost		**$32,746.3**	$28,160.1
Less: Accumulated depreciation		**15,274.2**	13,999.6
Plant and equipment, net		**$17,472.1**	$14,160.5

(A) Depreciable lives of production facilities related to long-term customer supply contracts are generally matched to the contract lives.

(B) The depreciable lives for various types of distribution equipment are: 10 to 25 years for cylinders, depending on the nature and properties of the product; 20 years for tanks; generally 7.5 years for customer stations; and 5 to 15 years for tractors and trailers.

Depreciation expense was $1,325.8, $1,302.7, and $1,284.1 in fiscal years 2023, 2022, and 2021, respectively.

11. GOODWILL

Changes to the carrying amount of consolidated goodwill by segment are as follows:

	Americas	Asia	Europe	Middle East and India	Corporate and other	Total
Goodwill, net as of 30 September 2021	$151.0	$184.3	$533.5	$8.0	$34.7	$911.5
Acquisitions[A]	—	—	17.0	7.5	—	24.5
Currency translation and other	(7.8)	(11.6)	(93.0)	0.3	(0.9)	(113.0)
Goodwill, net as of 30 September 2022	$143.2	$172.7	$457.5	$15.8	$33.8	$823.0
Currency translation and other	3.4	(0.8)	36.0	—	0.1	38.7
Goodwill, net as of 30 September 2023	**$146.6**	**$171.9**	**$493.5**	**$15.8**	**$33.9**	**$861.7**

(A) Goodwill acquired in fiscal year 2022 was primarily attributable to expected cost synergies associated with small business combinations, of which $3.2 was deductible for tax purposes.

30 September	2023	2022	2021
Goodwill, gross	**$1,158.4**	$1,096.0	$1,239.2
Accumulated impairment losses[A]	**(296.7)**	(273.0)	(327.7)
Goodwill, net	**$861.7**	$823.0	$911.5

(A) Accumulated impairment losses are attributable to our Latin America reporting unit ("LASA") within the Americas segment and include the impact 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. The impairment test for goodwill involves calculating the fair value of each reporting unit and comparing that value to the carrying value. If the fair value of the reporting unit is less than its carrying value, the difference is recorded as a goodwill impairment charge, not to exceed the total amount of goodwill allocated to that reporting unit. During the fourth quarter of fiscal year 2023, we conducted our annual goodwill impairment test and determined that the fair value of all our reporting units exceeded their carrying value.

12. INTANGIBLE ASSETS

The table below summarizes the major classes of our intangible assets:

	2023			2022		
30 September	**Gross**	**Accumulated Amortization/ Impairment**	**Net**	Gross	Accumulated Amortization/ Impairment	Net
Finite-lived:						
Customer relationships	**$507.3**	**($262.2)**	**$245.1**	$487.5	($226.3)	$261.2
Patents and technology	**41.1**	**(26.7)**	**14.4**	33.1	(16.3)	16.8
Other	**76.7**	**(38.7)**	**38.0**	73.4	(37.0)	36.4
Total finite-lived intangible assets	**$625.1**	**($327.6)**	**$297.5**	$594.0	($279.6)	$314.4
Indefinite-lived:						
Trade names and trademarks	**47.2**	**(10.1)**	**37.1**	42.2	(9.1)	33.1
Total intangible assets	**$672.3**	**($337.7)**	**$334.6**	$636.2	($288.7)	$347.5

Amortization expense for intangible assets was $32.5, $35.5, and $37.2 in fiscal years 2023, 2022, and 2021, respectively. Refer to Note 1, *Basis of Presentation and Major Accounting Policies*, for the amortization periods for each major class of intangible assets.

The table below details the amount of amortization expense expected to be recorded for our finite-lived intangible assets in each of the next five years and thereafter:

2024	$30.4
2025	29.2
2026	28.2
2027	27.7
2028	25.6
Thereafter	156.4
Total	$297.5

Indefinite-lived intangible assets are subject to impairment testing at least annually or more frequently if events or changes in circumstances indicate that potential impairment exists. The impairment test for indefinite-lived intangible assets involves calculating the fair value of the indefinite-lived intangible assets and comparing the fair value to their carrying value. If the fair value is less than the carrying value, the difference is recorded as an impairment loss. During the fourth quarter of fiscal year 2023, we conducted our annual impairment test of indefinite-lived intangible assets and determined that the fair value of all our intangible assets exceeded their carrying value.

13. LEASES

Lessee Accounting

We are the lessee under various agreements for real estate, vehicles, aircraft, and other equipment that are accounted for as operating leases. Our finance leases principally relate to the right to use machinery and equipment and are not material.

Amounts associated with operating leases and their presentation on our consolidated balance sheets are as follows:

30 September	**2023**	2022
Operating lease right-of-use assets	**$974.0**	$694.8
Operating lease liabilities		
Payables and accrued liabilities	**94.7**	90.0
Noncurrent operating lease liabilities	**631.1**	592.1
Total operating lease liabilities	**$725.8**	$682.1

30 September	**2023**	2022
Weighted-average remaining lease term in years[(A)]	**19.9**	19.1
Weighted-average discount rate[(B)]	**2.6 %**	2.1 %

[(A)] Calculated on the basis of the remaining lease term and the lease liability balance for each lease as of the reporting date.

[(B)] Calculated on the basis of the discount rate used to calculate the lease liability for each lease and the remaining balance of the lease payments for each lease as of the reporting date.

The following maturity analysis of our operating lease liabilities as of 30 September 2023 presents the undiscounted cash flows for each of the next five years and thereafter with a reconciliation to the lease liability recognized on our balance sheet:

	Operating Leases
2024	$111.0
2025	89.6
2026	67.4
2027	50.6
2028	44.6
Thereafter	628.8
Total undiscounted lease payments	992.0
Imputed interest	(266.2)
Present value of lease liability recognized on balance sheet	**$725.8**

Operating lease expense was $109.9, $105.3, and $89.5 for fiscal years 2023, 2022, and 2021, respectively. These amounts do not include short-term and variable lease expenses, which were not material. The impacts associated with our operating leases on the consolidated statements of cash flows are reflected within "Other adjustments" within operating activities. This includes the noncash operating lease expense as well as a use of cash of $337.8, $128.0, and $98.8 for payments on amounts included in the measurement of the lease liability for fiscal years 2023, 2022, and 2021, respectively. Payments in fiscal year 2023 included a lump-sum payment of $209 for a land lease associated with the NGHC joint venture. Refer to Note 3, *Variable Interest Entities*, for additional information.

We recorded noncash right-of-use asset additions of approximately $150, $252, and $259 in fiscal years 2023, 2022, and 2021, respectively.

Lessor Accounting

Certain contracts associated with facilities that are built to provide product to a specific customer have been accounted for as containing embedded leases. Refer to Note 1, *Basis of Presentation and Major Accounting Policies*, for a description of our accounting policy for arrangements in which we are the lessor.

"Lease receivables, net" relate to sales-type leases on certain on-site assets for which payments are collected over the contract term. The table below details balances associated with our lease receivables:

30 September	2023	2022
Current lease receivables, net[(A)]	$78.0	$77.8
Noncurrent lease receivables, net	494.7	583.1
Total lease receivables, net	**$572.7**	$660.9

[(A)] Presented within "Other receivables and current assets" on our consolidated balance sheets.

The majority of our leases are of high credit quality and were originated prior to fiscal year 2017. As of 30 September 2023 and 2022, the credit quality of lease receivables did not require a material allowance for credit losses.

The table below summarizes lease payments collected in fiscal years 2023, 2022, and 2021:

Fiscal Year Ended 30 September	2023	2022	2021
Payments that reduced the noncurrent lease receivable balance	$79.6	$94.0	$98.8
Payments recognized as interest income	49.6	59.1	67.4
Total lease payments collected	**$129.2**	$153.1	$166.2

As of 30 September 2023, minimum lease payments expected to be collected were as follows:

2024	$120.5
2025	115.1
2026	105.4
2027	92.2
2028	76.1
Thereafter	279.1
Total	788.4
Unearned interest income	(215.7)
Lease receivables, net	**$572.7**

Our contracts generally do not have the option to extend or terminate the lease or provide the customer the right to purchase the asset at the end of the contract term. Instead, renewal of such contracts requires negotiation of mutually agreed terms by both parties. Unless the customer terminates within the required notice period, the contract will go into evergreen. Given the long-term duration of our contracts, there is no assumed residual value for the assets at the end of the lease term.

14. 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 and third-party debt. 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 September 2023 is 3.1 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 our business activity and sourcing decisions.

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

	2023		2022	
30 September	**US$ Notional**	**Years Average Maturity**	US$ Notional	Years Average Maturity
Forward Exchange Contracts				
Cash flow hedges	**$4,463.2**	**0.7**	$4,525.0	0.7
Net investment hedges	**864.0**	**2.5**	542.2	2.2
Not designated	**709.4**	**0.3**	534.3	0.3
Total Forward Exchange Contracts	**$6,036.6**	**0.9**	$5,601.5	0.8

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 €1,938.6 million ($2,049.7) at 30 September 2023 and €1,265.4 million ($1,240.4) at 30 September 2022. 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, we manage our debt portfolio and hedging program 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 September 2023, 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. In May 2023, NGHC entered into floating-to-fixed interest rate swaps that are designated as cash flow hedges in connection with the non-recourse project financing secured by the joint venture. Refer to Note 3, *Variable Interest Entities*, for additional information.

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 the U.S. Dollar and each of the Chinese Renminbi, Indian Rupee, and Chilean Peso.

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

	2023				2022			
30 September	**US$ Notional**	**Average Pay %**	**Average Receive %**	**Years Average Maturity**	US$ Notional	Average Pay %	Average Receive %	Years Average Maturity
Interest rate swaps (fair value hedge)	**$800.0**	**SOFR**	**1.64 %**	**4.0**	$800.0	Various	1.64 %	5.0
Interest rate swaps (cash flow hedge)	**$1,182.5**	**2.82 %**	**SOFR**	**22.1**	$—	— %	— %	0.0
Cross currency interest rate swaps (net investment hedge)	**$80.8**	**4.60 %**	**3.65 %**	**0.9**	$176.7	4.12 %	3.07 %	1.2
Cross currency interest rate swaps (cash flow hedge)	**$598.2**	**4.89 %**	**3.22 %**	**2.2**	$785.7	4.78 %	3.05 %	2.3
Cross currency interest rate swaps (not designated)	**$44.5**	**5.39 %**	**3.54 %**	**0.2**	$37.7	5.39 %	3.54 %	1.2

The table below provides the amounts recorded on the consolidated balance sheet related to cumulative basis adjustments for fair value hedges:

	Carrying amounts of hedged item		Cumulative hedging adjustment, included in carrying amount	
30 September	**2023**	2022	**2023**	2022
Long-term debt	**$2,011.4**	$2,012.9	**($80.5)**	($77.1)

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The tables below summarize the fair value and balance sheet location of our outstanding derivatives.

30 September	Balance Sheet Location	2023	2022	Balance Sheet Location	2023	2022
Derivatives Designated as Hedging Instruments:						
Forward exchange contracts	Other receivables and current assets	**$50.2**	$71.6	Payables and accrued liabilities	**$94.1**	$226.2
Interest rate management contracts	Other receivables and current assets	**13.0**	36.7	Payables and accrued liabilities	**—**	—
Forward exchange contracts	Other noncurrent assets	**19.8**	60.8	Other noncurrent liabilities	**25.7**	46.9
Interest rate management contracts	Other noncurrent assets	**300.8**	12.5	Other noncurrent liabilities	**87.0**	91.2
Total Derivatives Designated as Hedging Instruments		**$383.8**	$181.6		**$206.8**	$364.3
Derivatives Not Designated as Hedging Instruments:						
Forward exchange contracts	Other receivables and current assets	**$6.4**	$6.1	Payables and accrued liabilities	**$4.6**	$2.1
Interest rate management contracts	Other receivables and current assets	**3.9**	—	Payables and accrued liabilities	**—**	—
Forward exchange contracts	Other noncurrent assets	**—**	0.1	Other noncurrent liabilities	**—**	0.1
Interest rate management contracts	Other noncurrent assets	**—**	1.3	Other noncurrent liabilities	**—**	—
Total Derivatives Not Designated as Hedging Instruments		**$10.3**	$7.5		**$4.6**	$2.2
Total Derivatives		**$394.1**	$189.1		**$211.4**	$366.5

Refer to Note 15, *Fair Value Measurements*, which defines fair value, describes the method for measuring fair value, and provides additional disclosures regarding fair value measurements.

The tables below summarize gains (losses) recognized in other comprehensive income during the period related to our net investment and cash flow hedging relationships:

	2023	2022
Net Investment Hedging Relationships		
Forward exchange contracts	**($39.3)**	$89.8
Foreign currency debt	**(99.9)**	229.6
Cross currency interest rate swaps	**(5.9)**	12.5
Total Amount Recognized in OCI	**(145.1)**	331.9
Tax effects	**35.8**	(82.1)
Net Amount Recognized in OCI	**($109.3)**	$249.8
Derivatives in Cash Flow Hedging Relationships		
Forward exchange contracts	**$111.1**	($310.2)
Forward exchange contracts, excluded components	**(18.7)**	2.8
Other[A]	**325.4**	123.2
Total Amount Recognized in OCI	**417.8**	(184.2)
Tax effects	**(48.6)**	63.9
Net Amount Recognized in OCI	**$369.2**	($120.3)

[A] Other primarily includes interest rate and cross currency interest rate swaps for which excluded components are recognized in “Payables and accrued liabilities” and “Other receivables and current assets” as a component of accrued interest payable and accrued interest receivable, respectively. These excluded components are recorded in “Other non-operating income (expense), net” over the life of the cross currency interest rate swap. Other also includes the recognition of our share of gains and losses, net of tax, related to interest rate swaps held by our equity affiliates.

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The tables below summarize the location and amounts recognized in income related to our cash flow and fair value hedging relationships by contract type:

	Sales		Cost of Sales		Interest Expense		Other Non-Operating Income (Expense), Net	
	2023	2022	**2023**	2022	**2023**	2022	**2023**	2022
Total presented in consolidated income statements that includes effects of hedging below	**$12,600.0**	$12,698.6	**$8,833.0**	$9,338.5	**$177.5**	$128.0	**($39.0)**	$62.4
(Gain) Loss Effects of Cash Flow Hedging:								
Forward Exchange Contracts:								
Amount reclassified from OCI into income	**($0.6)**	$0.8	**$4.9**	($0.1)	**$—**	$—	**($77.8)**	$205.7
Amount excluded from effectiveness testing recognized in earnings based on amortization approach	**—**	—	**—**	—	**—**	—	**15.7**	4.6
Other:								
Amount reclassified from OCI into income	**—**	—	**—**	—	**5.5**	5.8	**(5.2)**	(95.1)
Total (Gain) Loss Reclassified from OCI to Income	**(0.6)**	0.8	**4.9**	(0.1)	**5.5**	5.8	**(67.3)**	115.2
Tax effects	**0.1**	(0.3)	**(1.2)**	(0.3)	**(2.0)**	(2.2)	**16.7**	(27.5)
Net (Gain) Loss Reclassified from OCI to Income	**($0.5)**	$0.5	**$3.7**	($0.4)	**$3.5**	$3.6	**($50.6)**	$87.7
(Gain) Loss Effects of Fair Value Hedging:								
Other:								
Hedged items	**$—**	$—	**$—**	$—	**($3.4)**	($77.6)	**$—**	$—
Derivatives designated as hedging instruments	**—**	—	**—**	—	**3.4**	77.6	**—**	—
Total (Gain) Loss Recognized in Income	**$—**	$—	**$—**	$—	**$—**	$—	**$—**	$—

The table below summarizes the location and amounts recognized in income related to our derivatives not designated as hedging instruments by contract type:

	Other Income (Expense), Net		Other Non-Operating Income (Expense), Net	
	2023	2022	**2023**	2022
The Effects of Derivatives Not Designated as Hedging Instruments:				
Forward Exchange Contracts	**($1.0)**	($3.7)	**($2.4)**	($2.9)
Other	**—**	—	**0.3**	(2.3)
Total (Gain) Loss Recognized in Income	**($1.0)**	($3.7)	**($2.1)**	($5.2)

The amount of unrealized gains and losses related to cash flow hedges as of 30 September 2023 that are expected to be reclassified to earnings in the next twelve months is not material.

The cash flows related to derivative contracts are generally 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 $94.2 and $114.8 as of 30 September 2023 and 2022, 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, Moody's, or Fitch. The collateral that the counterparties would be required to post was $345.0 and $62.8 as of 30 September 2023 and 2022, respectively. No financial institution is required to post collateral at this time, as all have credit ratings at or above threshold.

15. 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 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. 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 14, *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.

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

	2023		2022	
30 September	**Carrying Value**	**Fair Value**	Carrying Value	Fair Value
Assets				
Derivatives				
Forward exchange contracts	**$76.4**	**$76.4**	$138.6	$138.6
Interest rate management contracts	**317.7**	**317.7**	50.5	50.5
Liabilities				
Derivatives				
Forward exchange contracts	**$124.4**	**$124.4**	$275.3	$275.3
Interest rate management contracts	**87.0**	**87.0**	91.2	91.2
Long-term debt, including current portion and related party	**10,046.3**	**9,173.5**	7,634.1	6,721.2

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

	2023				2022			
30 September	**Total**	**Level 1**	**Level 2**	**Level 3**	Total	Level 1	Level 2	Level 3
Assets at Fair Value								
Derivatives								
Forward exchange contracts	**$76.4**	**$—**	**$76.4**	**$—**	$138.6	$—	$138.6	$—
Interest rate management contracts	**317.7**	**—**	**317.7**	**—**	50.5	—	50.5	—
Total Assets at Fair Value	**$394.1**	**$—**	**$394.1**	**$—**	$189.1	$—	$189.1	$—
Liabilities at Fair Value								
Derivatives								
Forward exchange contracts	**$124.4**	**$—**	**$124.4**	**$—**	$275.3	$—	$275.3	$—
Interest rate management contracts	**87.0**	**—**	**87.0**	**—**	91.2	—	91.2	—
Total Liabilities at Fair Value	**$211.4**	**$—**	**$211.4**	**$—**	$366.5	$—	$366.5	$—

16. DEBT

The table below summarizes our total outstanding debt as reflected on our consolidated balance sheets:

30 September	**2023**	2022
Short-term borrowings[(A)]	**$259.5**	$10.7
Current portion of long-term debt	**615.0**	548.3
Long-term debt	**9,280.6**	6,433.8
Long-term debt – related party	**150.7**	652.0
Total Debt	**$10,305.8**	$7,644.8

(A) Balances reflect bank obligations with weighted average interest rates of 5.2% and 4.2% as of 30 September 2023 and 2022, respectively. The increase from fiscal year 2022 primarily relates to commercial paper.

Related Party Debt

Our related party debt includes loans with our joint venture partners. Total debt owed to related parties was $328.3 and $781.0 as of 30 September 2023 and 30 September 2022, respectively, of which $177.6 and $129.0, respectively, was reflected within "Current portion of long-term debt" on our consolidated balance sheets. During the third quarter of fiscal year 2023, outstanding shareholder loans to the NGHC joint venture were converted to equity in the entity. Refer to Note 3, *Variable Interest Entities*, for additional information on this joint venture. The remaining related party debt balance as of 30 September 2023 primarily includes a loan with Lu'An Clean Energy Company.

Debt Covenants

Various debt agreements to which we are a party include financial covenants and other restrictions, including restrictions pertaining to the ability to create property liens and enter into certain sale and leaseback transactions. As of 30 September 2023, we were in compliance with all the financial and other covenants under our debt agreements.

Summary of Long-Term Debt Instruments

The table below summarizes the coupon interest rates, fiscal year maturities, and carrying amounts of our long-term debt, including current portion and amounts owed to related parties. Variable rates are determined as of 30 September 2023.

30 September	Maturities	2023	2022
Payable in U.S. Dollars			
Medium-term Notes (weighted average rate)			
Series E 7.6%	2026	**$17.2**	$17.2
Senior Notes			
Note 2.75%	2023	**—**	400.0
Note 3.35%	2024	**400.0**	400.0
Note 1.50%	2026	**550.0**	550.0
Note 1.85%	2027	**650.0**	650.0
Note 2.05%	2030	**900.0**	900.0
Note 4.800%	2033	**600.0**	—
Note 2.70%	2040	**750.0**	750.0
Note 2.80%	2050	**950.0**	950.0
Other (weighted average rate)			
Variable-rate industrial revenue bonds 3.55%	2035 to 2050	**618.9**	618.9
Other variable-rate 6.78%	2024 to 2032	**41.4**	41.4
Payable in Other Currencies			
Eurobonds 1.000%	2025	**317.2**	294.1
Eurobonds 0.500%	2028	**528.6**	490.1
Eurobonds 0.800%	2032	**528.6**	490.1
Eurobonds 4.000%	2035	**740.1**	—
Saudi Riyal Loan Facility variable-rate 4.10%	2023	**—**	195.6
Saudi Riyal Loan Facility variable-rate 7.00%	2027	**451.1**	—
Saudi Riyal Loan Facility 2.00%	2034	**192.1**	—
New Taiwan Dollar Loan Facility 1.86%	2024 to 2028	**167.5**	189.0
New Taiwan Dollar Loan Facility 2.66%	2026 to 2029	**186.1**	31.5
New Taiwan Dollar Loan Facility variable-rate 2.55%	2026 to 2030	**3.1**	—
Other	2023	**—**	0.1
Related Party Debt			
Chinese Renminbi 5.5%	2024 to 2027	**313.5**	321.5
Chinese Renminbi 5.7%	2033	**14.8**	12.2
Non-Recourse Debt Associated With NGHC[(A)]	2027 to 2053	**1,364.8**	—
Finance Lease Obligations *(weighted average rate)*			
Foreign 11.4%	2025 to 2036	**7.5**	7.6
Total Principal Amount		**$10,292.5**	$7,309.3
Plus: Related party shareholder loans to NGHC		**—**	447.3
Less: Unamortized discount and debt issuance costs		**(165.7)**	(45.4)
Less: Fair value hedge accounting adjustments[(B)]		**(80.5)**	(77.1)
Total Long-term Debt		**$10,046.3**	$7,634.1
Less: Current portion of long-term debt		**(615.0)**	(548.3)
Less: Long-term debt – related party		**(150.7)**	(652.0)
Long-term Debt		**$9,280.6**	$6,433.8

[(A)] Refer to the "NEOM Green Hydrogen Project Financing" section below for additional information.
[(B)] Refer to Note 14, *Financial Instruments*, for additional information.

Principal maturities of long-term debt, including current portion and amounts owed to related parties, in each of the next five years and thereafter are as follows:

2024	$615.3
2025	419.5
2026	701.4
2027	1,362.8
2028	632.2
Thereafter	6,561.3
Total	**$10,292.5**

Interest

The table below reconciles interest incurred to interest expense as presented on our consolidated income statements. Capitalized interest represents the portion of interest incurred that we include in the cost of new plant and equipment that we build during the year.

Fiscal Year Ended 30 September	**2023**	2022	2021
Interest incurred	**$292.9**	$169.0	$170.1
Less: Capitalized interest	**115.4**	41.0	28.3
Interest expense	**$177.5**	$128.0	$141.8

Cash paid for interest, net of amounts capitalized, was $131.5, $128.5, and $150.4 in fiscal years 2023, 2022, and 2021, respectively.

Green Financing

On 3 March 2023, we issued our inaugural multi-currency green bonds under our new Green Finance Framework, which was established to further align our financings with our sustainability strategy. The concurrent offerings included U.S. Dollar- and Euro-denominated fixed-rate notes with aggregate principal amounts of $600 and €700 million, respectively. The proceeds from the notes were reduced by deferred financing charges and discounts of approximately $15, which are being amortized over the life of the underlying bonds.

Credit Facilities

2021 Credit Agreement

We have a five-year $2.75 billion revolving credit agreement maturing 31 March 2026 with a syndicate of banks (the “2021 Credit Agreement”), under which senior unsecured debt is available to us and certain of our subsidiaries. The 2021 Credit Agreement provides a source of liquidity and supports our commercial paper program. No borrowings were outstanding under the 2021 Credit Agreement as of 30 September 2023.

The only financial covenant in the 2021 Credit Agreement is a maximum ratio of total debt to total capitalization (equal to total debt plus total equity) not to exceed 70%. The 2021 Credit Agreement defines total debt as the aggregate principal amount of all indebtedness, excluding limited recourse debt of any project finance subsidiary. Accordingly, this calculation does not consider borrowings associated with NGHC.

Foreign Credit Facilities

We also have credit facilities available to certain of our foreign subsidiaries totaling $1,596.8, of which $1,041.4 was borrowed and outstanding as of 30 September 2023. The amount borrowed and outstanding as of 30 September 2022 was $457.5. The increase from 30 September 2022 was driven by borrowings on a new variable-rate Saudi Riyal loan facility that matures in October 2026. The interest rate on the facility is based on SAIBOR plus an annual margin of 1.35%. We entered into this facility in October 2022 and utilized a portion of the proceeds to repay a variable-rate 4.10% Saudi Riyal loan facility of $195.6, which was presented within long-term debt on our consolidated balance sheet as of 30 September 2022.

NEOM Green Hydrogen Project Financing

In May 2023, NGHC secured non-recourse project financing of approximately $6.1 billion, which is expected to fund about 73% of the NEOM Green Hydrogen Project and will be drawn over the construction period. At the same time, NGHC secured additional non-recourse credit facilities totaling approximately $500 primarily for working capital needs. As of 30 September 2023, the joint venture had borrowed $1.4 billion of the available financing. For additional information, including details of related debt instruments, refer to Note 3, *Variable Interest Entities*.

17. RETIREMENT BENEFITS

We and certain of our subsidiaries sponsor defined benefit pension plans and defined contribution plans that cover a substantial portion of our worldwide employees. The principal defined benefit pension plans are the U.S. salaried pension plan and the U.K. pension plan. These plans were closed to new participants in 2005, after which defined contribution plans were offered to new employees. The principal defined contribution plan is the Retirement Savings Plan, in which a substantial portion of the U.S. employees participate. A similar plan is offered to U.K. employees. We also provide other postretirement benefits consisting primarily of healthcare benefits to U.S. retirees who meet age and service requirements.

Defined Benefit Pension Plans

Pension benefits earned are generally based on years of service and compensation during active employment. The components of net periodic (benefit) cost for our defined benefit pension plans for fiscal years 2023, 2022, and 2021 were as follows:

	Fiscal Year Ended 30 September								
	2023			2022			2021		
	U.S.	Inter-national	**Total**	U.S.	Inter-national	Total	U.S.	Inter-national	Total
Service cost	$10.9	$12.3	**$23.2**	$18.3	$21.5	$39.8	$21.3	$23.4	$44.7
Non-service cost (benefit):									
Interest cost	129.9	59.9	**189.8**	73.9	28.9	102.8	68.9	25.2	94.1
Expected return on plan assets	(127.1)	(49.2)	**(176.3)**	(168.3)	(67.4)	(235.7)	(194.5)	(83.4)	(277.9)
Prior service cost amortization	1.2	0.7	**1.9**	1.3	—	1.3	1.2	—	1.2
Actuarial loss amortization	59.7	11.6	**71.3**	66.0	14.7	80.7	78.5	19.3	97.8
Settlements	1.4	0.6	**2.0**	6.0	0.2	6.2	1.3	0.5	1.8
Curtailments	—	(1.9)	**(1.9)**	—	—	—	—	—	—
Other	—	0.9	**0.9**	—	1.3	1.3	—	1.0	1.0
Net Periodic Cost (Benefit)	$76.0	$34.9	**$110.9**	($2.8)	($0.8)	($3.6)	($23.3)	($14.0)	($37.3)

Our service costs are primarily included within "Cost of sales" and "Selling and administrative expense" on our consolidated income statements. The amount of service costs capitalized in fiscal years 2023, 2022 and 2021 were not material. The non-service related impacts, including pension settlement losses and curtailment gains, 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 settlement losses 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. We recognized pension settlement losses of $1.4, $6.0 and $1.3 in fiscal years 2023, 2022 and 2021, respectively, to accelerate recognition of a portion of actuarial losses deferred in accumulated other comprehensive loss associated with the U.S. supplementary pension plan.

We calculate net periodic benefit cost for a given fiscal year based on assumptions developed at the end of the previous fiscal year. The following table sets forth the weighted average assumptions used in the calculation of net periodic benefit cost:

	2023		2022		2021	
	U.S.	**International**	U.S.	International	U.S.	International
Discount rate – Service cost	**5.7 %**	**4.6 %**	3.0 %	1.9 %	3.0 %	1.6 %
Discount rate – Interest cost	**5.5 %**	**5.0 %**	2.3 %	1.6 %	2.1 %	1.2 %
Expected return on plan assets	**5.8 %**	**4.2 %**	5.8 %	4.0 %	6.8 %	4.7 %
Rate of compensation increase	**3.5 %**	**3.4 %**	3.5 %	3.3 %	3.5 %	3.3 %

The projected benefit obligation ("PBO") is the actuarial present value of benefits attributable to employee service rendered to date, including the effects of estimated future salary increases. The following table sets forth the weighted average assumptions used in the calculation of the PBO:

	2023		2022	
	U.S.	**International**	U.S.	International
Discount rate	**6.0 %**	**5.1 %**	5.6 %	4.7 %
Rate of compensation increase	**3.5 %**	**3.4 %**	3.5 %	3.4 %

The following tables reflect the change in the PBO and the change in the fair value of plan assets based on the plan year measurement date, as well as the amounts recognized in the consolidated balance sheets:

	2023		2022	
	U.S.	**International**	U.S.	International
Change in Projected Benefit Obligation				
Obligation at beginning of year	**$2,450.8**	**$1,137.5**	$3,335.3	$1,969.6
Service cost	**10.9**	**12.3**	18.3	21.5
Interest cost	**129.9**	**59.9**	73.9	28.9
Amendments	**0.3**	**7.0**	1.5	0.1
Actuarial (gain) loss	**(68.3)**	**(80.1)**	(793.8)	(575.2)
Curtailments	**—**	**(14.8)**	—	—
Settlements	**(4.7)**	**(3.4)**	(19.2)	(0.9)
Participant contributions	**—**	**0.8**	—	1.2
Benefits paid	**(170.1)**	**(52.8)**	(165.2)	(53.0)
Currency translation and other	**—**	**96.0**	—	(254.7)
Obligation at End of Year	**$2,348.8**	**$1,162.4**	$2,450.8	$1,137.5

	2023		2022	
	U.S.	**International**	U.S.	International
Change in Plan Assets				
Fair value at beginning of year	**$2,404.0**	**$1,122.0**	$3,343.7	$1,905.0
Actual return on plan assets	**61.4**	**(52.7)**	(778.3)	(498.5)
Settlements	**(4.7)**	**(3.4)**	(19.2)	(0.9)
Company contributions	**8.4**	**24.2**	23.0	21.7
Participant contributions	**—**	**0.8**	—	1.2
Benefits paid	**(170.1)**	**(52.8)**	(165.2)	(53.0)
Currency translation and other	**—**	**95.9**	—	(253.5)
Fair Value at End of Year	**$2,299.0**	**$1,134.0**	$2,404.0	$1,122.0
Funded Status at End of Year	**($49.8)**	**($28.4)**	($46.8)	($15.5)

	2023		2022	
	U.S.	**International**	U.S.	International
Amounts Recognized				
Noncurrent assets	**$36.2**	**$83.8**	$36.4	$97.5
Accrued liabilities	**5.3**	**0.6**	5.8	0.4
Noncurrent liabilities	**80.7**	**111.6**	77.4	112.6
Net Liability Recognized	**($49.8)**	**($28.4)**	($46.8)	($15.5)

The changes in plan assets and benefit obligation that have been recognized in other comprehensive income on a pretax basis during fiscal years 2023 and 2022 consist of the following:

	2023		2022	
	U.S.	**International**	U.S.	International
Net actuarial (gain) loss arising during the period	**($2.6)**	**$7.0**	$152.8	($9.3)
Amortization of net actuarial loss	**(61.1)**	**(12.2)**	(72.0)	(14.9)
Prior service cost arising during the period	**0.3**	**7.0**	1.5	0.1
Amortization of prior service (cost) credit	**(1.2)**	**1.2**	(1.3)	—
Total	**($64.6)**	**$3.0**	$81.0	($24.1)

The net actuarial gains and losses represent the actual changes in the estimated obligation and plan assets that have not yet been recognized in the consolidated income statements and are included in accumulated other comprehensive loss. Actuarial losses arising during fiscal year 2023 are primarily attributable to lower than expected returns on plan assets that were partially offset by higher discount rates. Accumulated actuarial gains and losses that exceed a corridor are amortized over the average remaining service period of active U.S. participants, which was approximately seven years as of 30 September 2023. For U.K. participants, accumulated actuarial gains and losses that exceed a corridor are amortized over the average remaining life expectancy, which was approximately 23 years as of 30 September 2023.

The components recognized in accumulated other comprehensive loss on a pretax basis at 30 September consisted of the following:

	2023		2022	
	U.S.	**International**	U.S.	International
Net actuarial loss	**$461.8**	**$506.4**	$525.5	$511.6
Prior service cost	**5.6**	**11.9**	6.5	3.7
Net transition liability	**—**	**0.4**	—	0.4
Total	**$467.4**	**$518.7**	$532.0	$515.7

The accumulated benefit obligation ("ABO") is the actuarial present value of benefits attributed to employee service rendered to a particular date, based on current salaries. The ABO for all defined benefit pension plans was $3,429.1 and $3,491.4 as of 30 September 2023 and 2022, respectively.

The following table provides information on pension plans where the benefit liability exceeds the value of plan assets:

	2023		2022	
30 September	**U.S.**	**International**	U.S.	International
Pension Plans with PBO in Excess of Plan Assets:				
PBO	**$2,194.5**	**$295.1**	$2,289.7	$284.9
Fair value of plan assets	**2,108.5**	**182.9**	2,206.5	171.8
PBO in excess of plan assets	**$86.0**	**$112.2**	$83.2	$113.1
Pension Plans with ABO in Excess of Plan Assets:				
ABO	**$47.1**	**$144.3**	$50.5	$101.3
Fair value of plan assets	**—**	**56.3**	—	20.1
ABO in excess of plan assets	**$47.1**	**$88.0**	$50.5	$81.2

The tables above include several pension arrangements that are not funded because of jurisdictional practice. The ABO and PBO related to these plans as of 30 September 2023 were $54.5 and $58.7, respectively.

Pension Plan Assets

Our pension plan investment strategy is to invest in diversified portfolios to earn a long-term return consistent with acceptable risk in order to pay retirement benefits and meet regulatory funding requirements while minimizing company cash contributions over time. De-risking strategies are also employed for closed plans as funding improves, generally resulting in higher allocations to long duration bonds. The plans invest primarily in passive and actively managed equity and debt securities. Equity investments are diversified geographically and by investment style and market capitalization. Fixed income investments include sovereign, corporate and asset-backed securities generally denominated in the currency of the plan. The U.S. and U.K. plans' investment managers are authorized to utilize derivatives to manage interest and inflation exposure.

Asset allocation targets are established based on the long-term return, volatility and correlation characteristics of the asset classes, the profiles of the plans’ liabilities, and acceptable levels of risk. As of 30 September 2023, the U.S pension plan was at target with respect to the fixed income securities portfolio. The company continues to monitor the investment portfolio and various investment markets and will take action accordingly. Assets are routinely rebalanced through contributions, benefit payments, and otherwise as deemed appropriate. The actual and target allocations at the measurement date are as follows:

	2023 Target Allocation		**2023 Actual Allocation**		2022 Actual Allocation	
	U.S.	**International**	**U.S.**	**International**	U.S.	International
Asset Category						
Equity securities	**17 - 29%**	**5 - 30%**	**19 %**	**19 %**	17 %	31 %
Fixed income securities	**66 - 80%**	**70 - 95%**	**72 %**	**80 %**	73 %	68 %
Real estate and other	**3 - 5%**	**— %**	**8 %**	**— %**	10 %	— %
Cash	**— %**	**— %**	**1 %**	**1 %**	— %	1 %
Total			**100 %**	**100 %**	100 %	100 %

In fiscal year 2023, the 5.8% expected return for U.S. plan assets was based on a weighted average of estimated long-term returns of major asset classes and the historical performance of plan assets. In determining the estimated long-term asset class returns, we take into account historical long-term returns and the value of active management, as well as other economic and market factors, and input from our actuaries and investment advisors.

In fiscal year 2023, the 4.2% expected rate of return for international plan assets was based on a weighted average return for plans outside the U.S., which vary significantly in size, asset structure and expected returns. The expected asset return for the U.K. plan, which represents approximately 80% of the assets of our International plans, was 4.3% and was derived from expected equity and debt security returns.

The table below summarizes pension plan assets measured at fair value by asset class (see Note 15, *Fair Value Measurements*, for definition of the levels):

	2023				2022			
30 September	**Total**	**Level 1**	**Level 2**	**Level 3**	Total	Level 1	Level 2	Level 3
U.S. Qualified Pension Plans								
Cash and cash equivalents	**$14.6**	**$14.6**	**$—**	**$—**	$14.0	$14.0	$—	$—
Equity securities	**143.0**	**143.0**	**—**	**—**	127.4	127.4	—	—
Equity mutual funds	**105.2**	**105.2**	**—**	**—**	84.5	84.5	—	—
Equity pooled funds	**187.8**	**—**	**187.8**	**—**	188.4	—	188.4	—
Fixed income securities	**1,661.8**	**—**	**1,661.8**	**—**	1,759.1	—	1,759.1	—
Total U.S. Qualified Pension Plans at Fair Value	**$2,112.4**	**$262.8**	**$1,849.6**	**$—**	$2,173.4	$225.9	$1,947.5	$—
Real estate pooled funds[(A)]	**186.6**				230.6			
Total U.S. Qualified Pension Plans	**$2,299.0**				$2,404.0			
International Pension Plans								
Cash and cash equivalents	**$8.0**	**$8.0**	**$—**	**$—**	$12.1	$12.1	$—	$—
Equity pooled funds	**218.5**	**—**	**218.5**	**—**	348.1	—	348.1	—
Fixed income pooled funds	**724.6**	**—**	**630.4**	**94.2**	589.9	—	536.4	53.5
Other pooled funds	**17.1**	**—**	**17.1**	**—**	16.4	—	16.4	—
Insurance contracts	**165.8**	**—**	**—**	**165.8**	155.5	—	—	155.5
Total International Pension Plans	**$1,134.0**	**$8.0**	**$866.0**	**$260.0**	$1,122.0	$12.1	$900.9	$209.0

(A) Real estate pooled funds consist of funds that invest in properties. These funds generally allow for quarterly redemption with 30 days' notice. Timing for redemption could be delayed based on the priority of our request and the availability of funds. Interests in these funds are valued using the net asset value ("NAV") per share practical expedient and are not classified in the fair value hierarchy.

The table below summarizes changes in fair value of the pension plan assets classified as Level 3:

	Insurance Contracts	Fixed Income Pooled Funds	Total Level 3
Balance at 30 September 2021	$246.6	$—	$246.6
Purchases, sales, and settlements, net	—	80.3	80.3
Actual return on plan assets held at end of year	(91.1)	(26.8)	(117.9)
Balance at 30 September 2022	$155.5	$53.5	$209.0
Purchases, sales, and settlements, net	(3.7)	34.5	30.8
Actual return on plan assets held at end of year	14.0	6.2	20.2
Balance at 30 September 2023	**$165.8**	**$94.2**	**$260.0**

The descriptions and fair value methodologies for the U.S. and International pension plan assets are as follows:

Cash and Cash Equivalents

The carrying amounts of cash and cash equivalents approximate fair value due to the short-term maturity.

Equity Securities

Equity securities are valued at the closing market price reported on a U.S. or international exchange where the security is actively traded and are therefore classified as Level 1 assets.

Equity Mutual Funds

Shares of mutual funds are valued at the daily closing price as reported by the fund. The mutual funds are required to publish their daily NAV and to transact at that price. The mutual funds are deemed to be actively traded and are classified as Level 1 assets.

Equity Pooled Funds
Units of pooled funds are valued at the per unit NAV determined by the fund manager based on the value of the underlying traded holdings and are classified as Level 2 assets.

Fixed Income Securities
Corporate and government bonds, and related fixed income securities, are classified as Level 2 assets, as they are either valued at quoted market prices from observable pricing sources at the reporting date or valued based upon comparable securities with similar yields and credit ratings. U.S. plan fixed income investments primarily include U.S. corporate bonds, U.S. treasury investments, interest rate swaps, total return swaps, and U.S. treasury future contracts.

Fixed Income Pooled Funds
Fixed income pooled funds are classified as either Level 2 or Level 3 assets depending on the underlying investments of the fund. Fixed income pooled funds classified as Level 2 assets may hold government bonds, index linked bonds, corporate bonds, cash, and derivative instruments. The NAV of these assets is based on quoted market pricing from observable pricing sources or valued based upon comparable securities with similar yields, credit ratings, or factors as of the reporting date. Fixed income pooled funds classified as Level 3 may hold high yield bonds, emerging market debt, loans, structured credit, and other instruments. Due to the limited market activity of the underlying securities, the NAV of these assets is based on the fund manager's estimate of the fair value of the shares held as of the reporting date.

Other Pooled Funds
Other pooled funds are classified as Level 2 assets, as they are valued at the NAV of the shares held at year end, which is based on the fair value of the underlying investments.

Insurance Contracts
Insurance contracts are classified as Level 3 assets, as they are carried at contract value, which approximates the estimated fair value. The estimated fair value is based on the fair value of the underlying investment of the insurance company and discount rates that require inputs with limited observability.

Contributions and Projected Benefit Payments

Pension contributions to funded plans and benefit payments for unfunded plans for fiscal year 2023 were $32.6. Contributions for funded plans resulted primarily from contractual and regulatory requirements. Benefit payments to unfunded plans were due primarily to the timing of retirements. We anticipate contributing $35 to $45 to the defined benefit pension plans in fiscal year 2024. These contributions are anticipated to be driven primarily by contractual and regulatory requirements for funded plans and benefit payments for unfunded plans, which are dependent upon timing of retirements.

Projected benefit payments, which reflect expected future service, are as follows:

	U.S.	International
2024	$176.5	$59.9
2025	179.8	59.8
2026	182.2	63.5
2027	184.1	66.2
2028	187.5	68.1
2029-2033	943.2	372.1

These estimated benefit payments are based on assumptions about future events. Actual benefit payments may vary significantly from these estimates.

Defined Contribution Plans

We maintain a non-leveraged employee stock ownership plan ("ESOP") which forms part of the Air Products and Chemicals, Inc. Retirement Savings Plan ("RSP"). The ESOP was established in May of 2002. The balance of the RSP is a qualified defined contribution plan including a 401(k) elective deferral component. A substantial portion of U.S. employees are eligible and participate.

We treat dividends paid on ESOP shares as ordinary dividends. Under existing tax law, we may deduct dividends which are paid with respect to shares held by the plan. Shares of our common stock in the ESOP totaled 1,822,509 as of 30 September 2023.

Our contributions to the RSP include a Company core contribution for certain eligible employees who do not receive their primary retirement benefit from the defined benefit pension plans, with the core contribution based on a percentage of pay that is dependent on years of service. For the RSP, we also make matching contributions on overall employee contributions as a percentage of the employee contribution and include an enhanced contribution for certain eligible employees that do not participate in the defined benefit pension plans. Worldwide contributions expensed to income in fiscal years 2023, 2022, and 2021 were $71.5, $60.6, and $53.3, respectively.

Other Postretirement Benefits

We provide other postretirement benefits consisting primarily of healthcare benefits to certain U.S. retirees who meet age and service requirements. The healthcare benefit is a continued medical benefit until the retiree reaches age 65. Healthcare benefits are contributory, with contributions adjusted periodically. The retiree medical costs are capped at a specified dollar amount, with the retiree contributing the remainder. The cost of these benefits was not material in fiscal years 2023, 2022, and 2021. Accumulated postretirement benefit obligations as of the end of fiscal years 2023 and 2022 were $14.0 and $19.9, respectively, of which $3.7 and $4.9 were current obligations, respectively.

We recognize changes in other postretirement benefit plan obligations in other comprehensive income on a pretax basis. During fiscal years 2023 and 2022 we recognized a loss of $0.1 and $0.5, respectively, that arose during the period, and $2.0 and $1.6 of net actuarial gain amortization, respectively.

The net actuarial gain recognized in accumulated other comprehensive loss on a pretax basis was $2.4 and $4.5 as of 30 September 2023 and 2022, respectively.

18. COMMITMENTS AND CONTINGENCIES

Litigation

We are involved in various legal proceedings, including commercial, competition, environmental, intellectual property, regulatory, product liability, and insurance matters. 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.

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 $36 at 30 September 2023) on Air Products Brasil Ltda. This fine was based on a recommendation by a unit of the Brazilian Ministry of Justice, following an investigation beginning in 2003, which alleged 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. In the event of an adverse final judgment, we estimate the maximum possible loss to be the full amount of the fine of R$179.2 million (approximately $36 at 30 September 2023) plus interest accrued thereon until final disposition of the proceedings.

Additionally, in April 2023, we received a favorable ruling from a Texas state court in litigation involving disputed energy management charges related to Winter Storm Uri, a severe winter weather storm that impacted the U.S. Gulf Coast in February 2021. The ruling is subject to appeal and had no impact on our consolidated financial statements for the twelve months ended 30 September 2023.

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 27 sites on which a final settlement or remediation has not been achieved where we, usually along with others, have been designated a potentially responsible party by environmental authorities 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 September 2023 and 30 September 2022 included an accrual of $64.5 and $71.3, respectively, primarily as part of other noncurrent liabilities. The environmental liabilities will be paid over a period of up to 26 years. We estimate the exposure for environmental loss contingencies to range from $64 to a reasonably possible upper exposure of $78 as of 30 September 2023.

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 September 2023, $37.3 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 recognized a before-tax expense of $42 in fiscal year 2006 in results from discontinued operations and recorded an environmental accrual of $42 in continuing operations on the consolidated balance sheets.

During the second quarter of fiscal year 2020, we completed an updated cost review of the environmental remediation status at the Pace facility. The review was completed in conjunction with requirements to maintain financial assurance per the Consent Order issued by the FDEP discussed below. Based on our review, we expect ongoing activities to continue for 30 years. Additionally, we will require near-term spending to install new groundwater recovery wells and ancillary equipment, in addition to future capital to consider the extended time horizon for remediation at the site. As a result of these changes, we increased our environmental accrual for this site by $19 in continuing operations on the consolidated balance sheets and recognized a before-tax expense of $19 in results from discontinued operations in the second quarter of fiscal year 2020. There have been no significant changes to the estimated exposure range related to the Pace facility since the second quarter of fiscal year 2020.

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 corrective action management unit. Several groundwater recovery systems have been installed to contain and remove contamination from groundwater. We completed an extensive assessment of the site to determine the efficacy of existing measures, 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 remediate groundwater. 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 completed additional field work during 2021 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. The design of the optimized recovery system was initiated in fiscal year 2023 with construction expected to begin in fiscal year 2025. 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, along with the completion of a cost review every 5 years.

Piedmont

At 30 September 2023, $4.5 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, after which we signed a Consent Agreement Amendment memorializing our obligations to complete the cleanup of the site. Remediation has started in accordance with the design, which includes in-situ chemical oxidation treatment, as well as soil vapor extraction to remove volatile organic compounds from the unsaturated soils beneath the impacted areas of the plant. 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 September 2023, $10.5 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 continue 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, continuing post closure care for two closed RCRA surface impoundment units, and maintaining engineering controls. Additionally, we have conducted an interim corrective action to treat impacted soils as recommended in the TCEQ 2019 Annual Report. In 2012, we estimated the total exposure at this site to be $13. There have been no significant changes to the estimated exposure.

Asset Retirement Obligations

Our asset retirement obligations are primarily associated with long-term on-site supply contracts under which we have built a facility on land owned by the customer and are obligated to remove the facility at the end of the contract term. The retirement of assets includes the contractually required removal of a long-lived asset from service and encompasses the sale, removal, abandonment, recycling, or disposal of the assets as required at the end of the contract term. These obligations are primarily reflected within "Other noncurrent liabilities" on the consolidated balance sheets. The timing and/or method of settlement of these obligations are conditional on a future event that may or may not be within our control.

Changes to the carrying amount of our asset retirement obligations were as follows:

Balance at 30 September 2021	$269.6
Additional accruals	17.9
Liabilities settled	(7.8)
Accretion expense	11.1
Currency translation adjustment	(16.1)
Balance at 30 September 2022	$274.7
Additional accruals	20.4
Liabilities settled	(8.8)
Accretion expense	11.4
Currency translation adjustment	(0.4)
Balance at 30 September 2023	**$297.3**

Warranties and Guarantees

We do not expect that any sum we may have to pay in connection with warranties and guarantees will have a material adverse effect on our consolidated financial condition, liquidity, or results of operations.

Warranties

We, in the normal course of business operations, have issued product warranties related to equipment sales. Also, contracts often contain standard terms and conditions which typically include a warranty and indemnification to the buyer that the goods and services purchased do not infringe on third-party intellectual property rights. The provision for estimated future costs relating to warranties is not material to the consolidated financial statements.

Guarantees

To date, no equity contributions or payments have been made since the inception of the guarantees discussed below. The fair value of these guarantees is not material.

We issued performance guarantees as a condition of project financing associated with the NEOM Green Hydrogen Project that would require us to pay up to approximately $1.2 billion in the event of nonperformance in our role as EPC contractor. Our exposure will decline over time before expiring in November 2028. Refer to Note 3, *Variable Interest Entities,* for additional information regarding the project.

We are party to an equity support agreement and operations guarantee related to an air separation facility constructed in Trinidad for a venture in which we own 50%. At 30 September 2023, maximum potential payments under joint and several guarantees were $22.0. Exposures under the guarantees will be completely extinguished by 2024.

We also have a long-term sale of equipment contract with the JIGPC joint venture to engineer, procure, and construct the industrial gas facilities that will supply gases to Aramco. We provided bank guarantees to the joint venture to support our performance under the contract. As of 30 September 2023, our maximum potential payments were $244.5.

Unconditional Purchase Obligations

We are obligated to make future payments under unconditional purchase obligations as summarized below:

2024	$6,356
2025	2,673
2026	1,321
2027	699
2028	575
Thereafter	4,494
Total	**$16,118**

Approximately $8.8 billion of our unconditional purchase obligations relate to open purchase orders for plant and equipment, of which approximately $5 billion relates to the NEOM Green Hydrogen Project. Although open purchase orders are considered enforceable and legally binding, the terms generally allow us the option to reschedule, cancel, or otherwise modify based on our business needs. We have estimated the timing of these payments in the table above; however, timing of actual satisfaction of the obligations may vary.

Approximately $6.4 billion of our unconditional purchase obligations relate to helium and rare gases. The majority of these obligations occur after fiscal year 2028. Helium purchases include crude feedstock supply to helium refining plants in North America as well as refined helium purchases from sources around the world. As a rare byproduct of natural gas production in the energy sector, these helium sourcing agreements are medium- to long-term and contain take-if-tendered provisions. The refined helium is distributed globally and sold as a merchant gas, primarily under medium-term requirements contracts. While contract terms in our helium sourcing contracts are generally longer than our customer sales contracts, helium is a rare gas used in applications with few or no substitutions because of its unique physical and chemical properties.

Our unconditional purchase obligations also include commitments for power and natural gas supply as well as feedstock supply for numerous HyCO (hydrogen, carbon monoxide, and syngas) facilities. Our long-term sales contracts to customers are generally matched to the term of these obligations and provide recovery of price increases. As a result, we do not believe these purchase obligations would have a material effect on our financial condition or results of operations.

19. CAPITAL STOCK

Common Stock

Authorized common stock consists of 300 million shares with a par value of $1 per share. As of 30 September 2023, 249 million shares were issued, with 222 million issued and outstanding.

On 15 September 2011, the Board of Directors authorized the repurchase of up to $1.0 billion of our outstanding common stock. This program does not have a stated expiration date. If we repurchase shares pursuant to this authorization, we may do so under Rules 10b5-1 and 10b-18 under the Securities Exchange Act of 1934, as amended, through repurchase agreements established with one or more brokers. We did not purchase any of our outstanding shares during fiscal year 2023. At 30 September 2023, $485.3 in share repurchase authorization remained available.

A summary of the changes in common shares issued and outstanding in fiscal year 2023 is presented below:

Fiscal Year Ended 30 September	**2023**	2022	2021
Number of common shares, beginning of year	**221,838,696**	221,396,755	221,017,459
Issuance of treasury shares for stock option and award plans	**361,149**	441,941	379,296
Number of common shares, end of year	**222,199,845**	221,838,696	221,396,755

Preferred Stock

Authorized preferred stock consisted of 25 million shares with a par value of $1 per share. There were no preferred shares issued or outstanding as of 30 September 2023 and 2022.

20. SHARE-BASED COMPENSATION

Our outstanding share-based compensation programs include deferred stock units and stock options. During the fiscal year ended 30 September 2023, we granted market-based and time-based deferred stock units. We have not issued stock option awards since fiscal year 2015. 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 and the exercise of stock options. As of 30 September 2023, there were 1.3 million 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:

	2023	2022	2021
Before-tax share-based compensation cost	**$60.7**	$49.5	$44.5
Income tax benefit	**(14.6)**	(12.1)	(11.0)
After-tax share-based compensation cost	**$46.1**	$37.4	$33.5

Before-tax share-based compensation cost is primarily included in "Selling and administrative expense" on our consolidated income statements. The amount of share-based compensation cost capitalized in fiscal years 2023, 2022, and 2021 was not material.

Deferred Stock Units

We have granted deferred stock units to executives, selected employees, and outside directors. These deferred stock units entitle the recipient to one share of common stock upon vesting, which is conditioned, for employee recipients, on continued employment during the deferral period and may be conditioned on achieving certain performance targets. We grant deferred stock unit awards with a two- to five-year deferral period that are subject to payout upon death, disability, or retirement. Deferred stock units issued to outside directors are paid after service on the Board of Directors ends at the time elected by the director (not to exceed ten years after service ends). We generally expense the grant-date fair value of these awards on a straight-line basis over the vesting period; however, expense recognition is accelerated for retirement eligible individuals who meet the requirements for vesting upon retirement. We have elected to account for forfeitures as they occur, rather than to estimate them. Forfeitures have not been significant historically.

Market-based deferred stock units vest as long as the employee continues to be employed by the Company and upon the achievement of the performance target. The performance target, which is approved by the Compensation Committee, is our share price appreciation and dividends paid, or "total shareholder return," in relation to the S&P 500 Index (for fiscal year 2022 and 2023 awards) or a defined peer group (for awards granted prior to fiscal year 2022) over a three-year performance period beginning 1 October of the fiscal year of grant. We granted 85,612, 74,364, and 77,251 market-based deferred stock units in fiscal years 2023, 2022, and 2021, respectively.

The fair value of market-based deferred stock units was estimated using a Monte Carlo simulation model as these equity awards are tied to a market condition. 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 estimated grant-date fair value of market-based deferred stock units was $502.03, $427.23, and $235.48 per unit in fiscal years 2023, 2022, and 2021, respectively. The calculation of the fair value of market-based deferred stock units used the following assumptions:

	2023	2022	2021
Expected volatility	**32.5 %**	30.5 %	29.9 %
Risk-free interest rate	**4.0 %**	0.8 %	0.2 %
Expected dividend yield	**2.4 %**	2.1 %	2.1 %

In addition, in fiscal year 2023, we granted 119,954 time-based deferred stock units at a weighted average grant-date fair value of $308.91. In fiscal years 2022 and 2021, we granted 120,996 and 110,555 time-based deferred stock units at a weighted average grant-date fair value of $278.67 and $282.48, respectively.

A summary of deferred stock unit activity in fiscal year 2023 is presented below:

	Shares (000)	Weighted Average Grant-Date Fair Value
Deferred stock units outstanding at 30 September 2022	730	$222.13
Granted	206	389.34
Paid out	(159)	164.08
Forfeited	(87)	248.26
Adjusted	10	315.33
Deferred stock units outstanding at 30 September 2023	**700**	**$282.60**

Cash payments made for deferred stock units totaled $3.6, $5.5, and $5.2 in fiscal years 2023, 2022, and 2021, respectively. As of 30 September 2023, there was $75.3 of unrecognized compensation cost related to deferred stock units. This cost is expected to be recognized over a weighted average period of 1.6 years. The total fair value of deferred stock units paid out during fiscal years 2023, 2022, and 2021, including shares vested in prior periods, was $45.3, $92.9, and $88.0, respectively.

Stock Options

We have granted awards of options to purchase common stock to executives and selected employees. The exercise price of stock options equals the market price of our stock on the date of the grant. As of 30 September 2023, there was no unrecognized compensation cost as all stock option awards were fully vested.

A summary of stock option activity in fiscal year 2023 is presented below:

	Shares (000)	Weighted Average Exercise Price
Stock options outstanding and exercisable at 30 September 2022	564	$106.13
Exercised	(270)	90.57
Stock options outstanding and exercisable at 30 September 2023	**294**	**$120.42**

The weighted average remaining contractual term of stock options outstanding and exercisable at 30 September 2023 was 0.7 years. The aggregate intrinsic value of these stock options was $47.9, which represents the amount by which our closing stock price of $283.40 per share as of 30 September 2023 exceeds the exercise price multiplied by the number of in-the-money options outstanding or exercisable. The intrinsic value of stock options exercised during fiscal years 2023, 2022, and 2021 was $53.5, $20.2, and $29.0, respectively.

Compensation cost is generally recognized over the stated vesting period consistent with the terms of the arrangement, which is either on a straight-line or graded-vesting basis. Expense recognition is accelerated for retirement-eligible individuals who would meet the requirements for vesting of awards upon their retirement.

Cash received from option exercises during fiscal year 2023 was $24.0. The total tax benefit realized from stock option exercises in fiscal year 2023 was $12.5, of which $11.7 was the excess tax benefit.

21. ACCUMULATED OTHER COMPREHENSIVE LOSS

The table below summarizes changes in accumulated other comprehensive loss ("AOCL"), net of tax, attributable to Air Products:

	Derivatives qualifying as hedges	Foreign currency translation adjustments	Pension and postretirement benefits	Total
Balance at 30 September 2020	**($54.5)**	**($1,142.8)**	**($942.8)**	**($2,140.1)**
Other comprehensive income before reclassifications	3.3	267.3	274.3	544.9
Amounts reclassified from AOCL	43.5	—	74.6	118.1
Net current period other comprehensive income	$46.8	$267.3	$348.9	$663.0
Amount attributable to noncontrolling interests	20.6	18.3	(0.1)	38.8
Balance at 30 September 2021	**($28.3)**	**($893.8)**	**($593.8)**	**($1,515.9)**
Other comprehensive loss before reclassifications	(120.3)	(1,230.5)	(112.2)	(1,463.0)
Amounts reclassified from AOCL	91.4	7.3	64.8	163.5
Net current period other comprehensive loss	($28.9)	($1,223.2)	($47.4)	($1,299.5)
Amount attributable to noncontrolling interest	14.7	(44.6)	0.6	(29.3)
Balance at 30 September 2022	**($71.9)**	**($2,072.4)**	**($641.8)**	**($2,786.1)**
Other comprehensive income (loss) before reclassifications	369.2	151.1	(8.9)	511.4
Amounts reclassified from AOCL	(43.9)	(0.3)	53.8	9.6
Net current period other comprehensive income	$325.3	$150.8	$44.9	$521.0
Amount attributable to noncontrolling interest	192.3	(8.3)	0.3	184.3
Balance at 30 September 2023	**$61.1**	**($1,913.3)**	**($597.2)**	**($2,449.4)**

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

Fiscal Year Ended 30 September	**2023**	2022	2021
(Gain) Loss on Cash Flow Hedges, net of tax			
Sales	**($0.5)**	$0.5	($0.6)
Cost of sales	**3.7**	(0.4)	(0.3)
Interest expense	**3.5**	3.6	3.5
Other non-operating income (expense), net	**(50.6)**	87.7	40.9
Total (Gain) Loss on Cash Flow Hedges, net of tax	**($43.9)**	$91.4	$43.5
Currency Translation Adjustment			
Business and asset actions	**($0.3)**	$5.1	$—
Income from discontinued operations, net of tax	**—**	2.2	—
Currency Translation Adjustment	**($0.3)**	$7.3	$—
Pension and Postretirement Benefits, net of tax[(A)]	**$53.8**	$64.8	$74.6

[(A)] The components of net periodic benefit cost reclassified out of AOCL include items such as prior service cost amortization, actuarial loss amortization, settlements, and curtailments and are included in “Other non-operating income (expense), net” on the consolidated income statements. Refer to Note 17, *Retirement Benefits*, for additional information.

22. EARNINGS PER SHARE

The table below details the computation of basic and diluted earnings per share ("EPS"):

Fiscal Year Ended 30 September	**2023**	2022	2021
Numerator			
Net income from continuing operations	**$2,292.8**	$2,243.5	$2,028.8
Net income from discontinued operations	**7.4**	12.6	70.3
Net Income attributable to Air Products	**$2,300.2**	$2,256.1	$2,099.1
Denominator (*in millions*)			
Weighted average common shares — Basic	**222.3**	222.0	221.6
Effect of dilutive securities			
Employee stock option and other award plans	**0.4**	0.5	0.9
Weighted average common shares — Diluted	**222.7**	**222.5**	**222.5**
Per Share Data[A] *(U.S. Dollars per share)*			
Basic EPS from continuing operations	**$10.31**	$10.11	$9.16
Basic EPS from discontinued operations	**0.03**	0.06	0.32
Basic EPS attributable to Air Products	**$10.35**	$10.16	$9.47
Diluted EPS from continuing operations	**$10.30**	$10.08	$9.12
Diluted EPS from discontinued operations	**0.03**	0.06	0.32
Diluted EPS attributable to Air Products	**$10.33**	$10.14	$9.43

[A] EPS is calculated independently for each component and may not sum to total EPS due to rounding.

Diluted EPS attributable to Air Products reflects the potential dilution that could occur if stock options or other share-based awards were exercised or converted into common stock. The dilutive effect is computed using the treasury stock method, which assumes all share-based awards are exercised, and the hypothetical proceeds from exercise are used by the Company to purchase common stock at the average market price during the period. To the extent they would have been dilutive, the incremental shares, or the difference between shares assumed to be issued versus purchased, are included in the denominator of the diluted EPS calculation. Antidilutive outstanding share-based awards were not material in fiscal years 2023, 2022 and 2021.

23. INCOME TAXES

The table below summarizes income from U.S. and foreign operations before taxes:

	2023	2022	2021
United States income	**$1,050.5**	$947.9	$924.6
Foreign income	**1,227.6**	1,325.3	1,288.7
Equity affiliates' income	**604.3**	481.5	294.1
Income from continuing operations before taxes	**$2,882.4**	$2,754.7	$2,507.4

The table below details the components of our income tax provision:

	2023	2022	2021
Current Tax Provision			
Federal	**$167.6**	$149.1	$85.6
State	**41.0**	30.1	28.4
Foreign	**367.3**	289.3	254.8
Total current tax provision	**575.9**	468.5	368.8
Deferred Tax (Benefit) Provision			
Federal	**(12.5)**	15.6	54.7
State	**(5.8)**	(1.9)	(0.1)
Foreign	**(6.4)**	18.6	39.4
Total Deferred Tax (Benefit) Provision	**(24.7)**	32.3	94.0
Total Income Tax Provision	**$551.2**	$500.8	$462.8

Cash Paid for Taxes (Net of Cash Refunds)

Income tax payments, net of refunds, were $645.2, $369.2, and $383.8 in fiscal years 2023, 2022, and 2021, respectively. Fiscal year 2023, 2022, and 2021 reflect income tax refunds associated with discontinued operations of $0.6, $59.6, and $6.7, respectively.

U.S. Tax Cuts and Jobs Act

On 22 December 2017, the United States enacted the U.S. Tax Cuts and Jobs Act (the “Tax Act” or "Tax Reform"), which significantly changed existing U.S. tax laws, including a reduction in the federal corporate income tax rate to 21%, a deemed repatriation tax on unremitted foreign earnings, as well as other changes. As of 30 September 2023, our outstanding liability for the deemed repatriation tax was $131.1, of which $109.4 is presented within noncurrent liabilities on our consolidated balance sheets. We are paying this obligation in installments over three remaining years.

Inflation Reduction Act and CHIPS and Science Act of 2022

In August 2022, the U.S. Inflation Reduction Act of 2022 and the CHIPS and Science Act of 2022 were signed into law. These acts include, among other provisions, a corporate alternative minimum tax of 15%, an excise tax on the repurchase of corporate stock, various climate and energy provisions, and incentives for investment in semiconductor manufacturing. We expect to realize benefits for carbon sequestration and clean hydrogen production once our new projects in these areas come on-stream in the U.S.

Effective Tax Rate

The effective tax rate equals the income tax provision divided by income from continuing operations before taxes. A reconciliation of the differences between the United States federal statutory tax rate and the effective tax rate is provided below:

(Percent of income before taxes)	**2023**	2022	2021
U.S. federal statutory tax rate	**21.0 %**	21.0 %	21.0 %
State taxes, net of federal benefit	**1.0**	0.8	0.9
Income from equity affiliates	**(3.8)**	(3.4)	(2.5)
Foreign tax differentials	**0.7**	0.7	0.5
Tax on foreign repatriated earnings	**0.5**	0.7	0.7
Share-based compensation	**(0.3)**	(0.7)	(0.7)
Business and asset actions	**0.7**	0.1	—
Other	**(0.7)**	(1.0)	(1.4)
Effective Tax Rate	**19.1 %**	18.2 %	18.5 %

Equity affiliates' income, which is primarily presented net of income taxes on our consolidated income statements, favorably impacts our effective tax rate. This impact increased over the years presented primarily due to our phased investment in the JIGPC joint venture. See Note 9, *Equity Affiliates*, for additional information.

Foreign tax differentials represent the differences between foreign earnings subject to foreign tax rates that are different than the U.S. federal statutory rate and include tax holidays and incentives. Our income tax holidays relate to operations in jurisdictions that provide reduced income tax rates for certain qualifying activities and are conditioned upon us satisfying certain requirements.

Tax on foreign repatriated earnings includes costs related to U.S. taxation of foreign operations, foreign taxation on the current and future repatriation of foreign earnings, and a U.S. benefit for related foreign tax credits.

Share-based compensation reflects the impact from recognition of $10.2, $18.3, and $17.0 of excess tax benefits in our provision for income taxes during fiscal years 2023, 2022, and 2021, respectively.

During fiscal year 2023, we recorded a charge to net income for business and asset actions of $244.6 ($204.9 attributable to Air Products after tax). Refer to Note 4, *Business and Asset Actions*, for additional information. The charge included certain losses for which we could not recognize an income tax benefit and were subject to a valuation allowance of $36.0. Partially offsetting the valuation allowance cost was a $15.9 income tax benefit from a tax election related to a non-U.S. subsidiary.

In fiscal year 2021, Other includes net tax benefits of $21.5, including interest, resulting from the release of U.S. unrecognized tax benefits upon expiration of the statute of limitations on uncertain tax positions taken in prior years.

Deferred Tax Assets and Liabilities

The significant components of deferred tax assets and liabilities are as follows:

30 September	2023	2022
Gross Deferred Tax Assets		
Retirement benefits and compensation accruals	**$75.2**	$77.2
Tax loss carryforwards	**141.8**	126.3
Tax credits and other tax carryforwards	**46.2**	39.2
Reserves and accruals	**65.2**	55.4
Other	**81.3**	68.3
Valuation allowance	**(153.3)**	(100.1)
Deferred Tax Assets	**256.4**	266.3
Gross Deferred Tax Liabilities		
Plant and equipment	**1,192.0**	1,187.6
Currency gains	**20.6**	22.5
Unremitted earnings of foreign entities	**72.0**	72.9
Partnership and other investments	**18.6**	16.1
Intangible assets	**48.5**	69.8
Other	**11.1**	9.1
Deferred Tax Liabilities	**1,362.8**	1,378.0
Net Deferred Income Tax Liability	**$1,106.4**	$1,111.7

Deferred tax assets and liabilities are included within the consolidated balance sheets as follows:

	2023	2022
Deferred Tax Assets		
Other noncurrent assets	**$159.6**	$135.7
Deferred Tax Liabilities		
Deferred income taxes	**1,266.0**	1,247.4
Net Deferred Income Tax Liability	**$1,106.4**	$1,111.7

Deferred tax liabilities related to "Intangible assets" decreased primarily due to the impact of capitalizing research and development expenditures for U.S tax purposes. Deferred tax liabilities related to "Plant and equipment" increased due to the impact of accelerated tax depreciation deductions in excess of book depreciation, primarily in the United States. The increase was partially offset with book charges in excess of tax related to our business and asset actions that included certain costs for which we could not recognize an income tax benefit and were subject to a valuation allowance.

Deferred tax assets for "Tax loss carryforwards" increased primarily due to losses in certain Chinese subsidiaries. A portion of these losses were subject to a valuation allowance for which we could not recognize an income tax benefit. The deferred tax components for "Reserves and accruals" and "Other" were impacted by changes in tax deferred deductions and the timing of revenue recognition for local tax and accounting purposes.

As of 30 September 2023, we had the following deferred tax assets for certain tax credits:

Jurisdiction	Gross Tax Asset	Expiration Period
U.S. State	$2.0	2024 - 2036
U.S. Federal	20.9	2030 - 2033
Credits in Foreign Jurisdictions	17.7	2030 - 2041; Indefinite

Of the $17.7 credits in foreign jurisdictions, $16.0 have indefinite carryforward periods.

As of 30 September 2023, we had the following loss carryforwards:

Jurisdiction	Gross Loss Carryforward	Expiration Period
U.S. State Net Operating Loss	$237.1	2024 - 2040
U.S. State Capital Loss	35.2	2025 - 2027
U.S. Federal Capital Loss	86.3	2025 - 2027
Foreign Net Operating Loss	325.9	2024 - 2038; Indefinite
Foreign Capital Loss	197.8	Indefinite

Of the $325.9 of foreign net operating loss carryforwards, $128.9 have indefinite carryforward periods.

The valuation allowance was $153.3 and $100.1 as of 30 September 2023 and 2022, respectively. As of 30 September 2023, the balance primarily related to $33.6 of foreign credits and loss carryforwards, $18.7 of U.S. federal foreign income tax credits, $49.4 related to foreign capital losses, and $34.7 related to other charges from our Business and Asset Actions. If events warrant the reversal of the valuation allowance, it would result in a reduction of tax expense. We believe it is more likely than not that future earnings and reversal of deferred tax liabilities will be sufficient to utilize our deferred tax assets, net of existing valuation allowance, as of 30 September 2023.

Our U.S. federal and U.S. state capital losses primarily related to a loss realized upon the divestiture of our Russian subsidiary in fiscal year 2022. We believe it is more likely than not that we will recognize sufficient U.S. capital gain income in the future to utilize our capital losses before expiration.

We record income taxes on the undistributed earnings of our foreign subsidiaries and corporate joint ventures unless those earnings are indefinitely reinvested. Such earnings may be subject to foreign withholding and other taxes. The cumulative undistributed earnings that are considered to be indefinitely reinvested in foreign subsidiaries and corporate joint ventures are included in retained earnings on the consolidated balance sheets and amounted to $8.0 billion as of 30 September 2023. An estimated $749.0 in additional foreign withholding and other income taxes would be due if these earnings were remitted as dividends.

Unrecognized Tax Benefits

A reconciliation of the beginning and ending amount of the unrecognized tax benefits, which excludes interest and penalties, is as follows:

	2023	2022	2021
Unrecognized tax benefits balance at beginning of year	**$103.5**	$140.3	$237.0
Additions for tax positions of the current year	**10.9**	7.4	14.5
Additions for tax positions of prior years	**1.2**	6.6	3.5
Reductions for tax positions of prior years	**(6.0)**	(15.4)	(8.2)
Settlements	**(3.9)**	(0.6)	(3.1)
Statute of limitations expiration	**(10.6)**	(25.5)	(104.6)
Foreign currency translation	**1.4**	(9.3)	1.2
Unrecognized tax benefits balance at end of year	**$96.5**	$103.5	$140.3

Of our unrecognized tax benefits as of 30 September 2023, $73.8 would impact the effective tax rate from continuing operations if recognized.

In fiscal year 2022, reserves for unrecognized tax benefits decreased $25.5 due to statute of limitation expirations. We released reserves of $17.2 related to the sale of PMD. Upon release of the reserves, we recorded income tax benefits of $14.8 as a component of discontinued operations. The PMD reserve was net of related deferred tax assets of $2.4. In fiscal year 2023 we released an additional $5.2 of reserves related to the sale of PMD. Fiscal year 2022 also reflects a $15.4 reduction for tax positions of prior years. This was primarily due to a $10.6 reduction caused by changes to income tax rates.

In fiscal year 2021, reserves for unrecognized tax benefits decreased $104.6 due to statute of limitation expirations. We released reserves of $65.6 related to the sale of PMD, $8.2 associated with our former Energy-from-Waste business ("EfW"), and $27.5 for other reserves, including those associated with a tax election benefit related to a non-U.S. subsidiary in 2017. Upon release of the reserves related to PMD and EfW, we recorded income tax benefits of $51.8 and $8.2, respectively, as a component of discontinued operations. The PMD reserve was net of related deferred tax assets of $13.8. The release of other reserves of $27.5 was net of related deferred tax assets of $8.4 and resulted in an income tax benefit, including interest, of $21.5.

Interest and penalties related to unrecognized tax benefits are recorded as a component of income tax expense and totaled $5.0, $1.2, and ($0.2) in fiscal years 2023, 2022, and 2021, respectively. Our 2021 expense reflects a benefit from the reversal of accrued interest on reserves released during the period. Our accrued balance for interest and penalties was $26.3 and $22.6 as of 30 September 2023 and 2022, respectively.

Income Tax Examinations

We are currently under examination in a number of tax jurisdictions. It is reasonably possible that a change in our unrecognized tax benefits may occur in fiscal year 2024 if any of these examinations are resolved during the next twelve months. However, quantification of an estimated range cannot be made as of the date of this report.

We generally remain subject to examination in the following major tax jurisdictions for the years indicated below:

Major Tax Jurisdiction	Open Tax Years
North America	
United States – Federal	2018 - 2023
United States – State	2013 - 2023
Canada	2016 - 2023
Europe	
France	2020 - 2023
Netherlands	2018 - 2023
Spain	2017 - 2023
United Kingdom	2020 - 2023
Middle East	
Saudi Arabia	2018 - 2023
Asia	
China	2011 - 2023
South Korea	2015 - 2023
Taiwan	2018 - 2023
Latin America	
Chile	2019 - 2023

24. SUPPLEMENTAL INFORMATION

Related Party Transactions

We have related party sales to some of our equity affiliates and joint venture partners as well as other income primarily from fees charged for use of Air Products' patents and technology. Sales to and other income from related parties totaled approximately $380, $300, and $225 for the fiscal years ended 30 September 2023, 2022, and 2021, respectively. Sales 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. As of 30 September 2023 and 2022, our consolidated balance sheets included related party trade receivables of approximately $80 and $55, respectively.

Refer to Note 16, *Debt*, for information concerning debt owed to related parties.

Facility Closure

During the second quarter of fiscal year 2021, we recorded a charge of $23.2 primarily for a noncash write-down of assets associated with a contract termination in the Americas segment. This charge is reflected as "Facility closure" on our consolidated income statements for the fiscal year ended 30 September 2021 and was not recorded in the results of the Americas segment.

Supplemental Balance Sheet Information

Other Receivables and Current Assets

30 September	**2023**	2022
Derivative instruments	**$73.5**	$114.4
Value added tax receivable	**209.6**	94.2
Contract fulfillment costs	**89.0**	84.1
Contract assets	**124.7**	69.0
Current lease receivables	**78.0**	77.8
Current financing receivables	**50.0**	—
Other	**97.3**	76.3
Other receivables and current assets	**$722.1**	$515.8

Other Noncurrent Assets

30 September	**2023**	2022
Pension benefits	**$120.0**	$133.9
Long-term deposits on plant and equipment	**—**	200.0
Deferred tax assets	**159.6**	135.7
Prepaid tax	**22.2**	17.0
Investments other than equity method	**66.9**	66.7
Deferred financing fees	**58.8**	—
Derivative instruments	**320.6**	74.7
Other	**481.8**	319.0
Other noncurrent assets	**$1,229.9**	$947.0

Payables and Accrued Liabilities

30 September	2023	2022
Trade creditors	**$1,212.9**	$1,120.7
Contract liabilities	**413.0**	439.1
Dividends payable	**388.9**	359.4
Accrued payroll and employee benefits	**284.4**	249.1
Accrued interest	**106.4**	64.7
Current lease obligations	**94.7**	90.0
Derivative instruments	**98.7**	228.3
Pension and postretirement benefits	**9.6**	11.1
Other	**281.5**	209.2
Payables and accrued liabilities	**$2,890.1**	$2,771.6

Other Noncurrent Liabilities

30 September	2023	2022
Asset retirement obligations	**$285.1**	$265.0
Pension benefits	**192.3**	190.0
Postretirement benefits	**10.3**	15.0
Derivative instruments	**112.7**	138.2
Long-term accrued income taxes related to U.S. tax reform	**109.4**	134.6
Contingencies related to uncertain tax positions	**89.6**	95.6
Contract liabilities	**136.9**	67.2
Environmental liabilities	**50.2**	61.8
Other	**131.5**	131.7
Other noncurrent liabilities	**$1,118.0**	$1,099.1

25. BUSINESS SEGMENT AND GEOGRAPHIC INFORMATION

During the fiscal year ended 30 September 2023, we managed our operations, assessed performance, and reported earnings under the following reportable segments:

- Americas;
- Asia;
- Europe;
- Middle East and India; and
- Corporate and other

Our reportable segments reflect the manner in which our chief operating decision maker reviews results and allocates resources. We evaluate the performance of our segments based upon segment operating income. Except for the Corporate and other segment, each reportable segment meets the definition of an operating segment and does not include the aggregation of multiple operating segments. Our Corporate and other segment includes the aggregation of three operating segments that meet the aggregation criteria under GAAP.

Industrial Gases – Regional

The results of our regional industrial gas businesses are reflected in the Americas, Asia, Europe, and Middle East and India segments. These businesses produce and sell gases to diversified customers in dozens of industries, including those in refining, chemicals, metals, electronics, manufacturing, medical, and food. Our industrial gas portfolio includes atmospheric gases such as oxygen, nitrogen, and argon; process gases such as hydrogen, helium, carbon dioxide, carbon monoxide, and syngas (a mixture of hydrogen and carbon monoxide), and specialty gases. We offer our industrial gas products through a variety of supply modes as described in Note 6, *Revenue Recognition*.

The industrial gases business develops, builds, and operates equipment for the production or processing of gases. Electricity is the largest cost component in the production of atmospheric gases. To produce hydrogen, carbon monoxide, and syngas, steam methane reformers use natural gas as the primary raw material, while gasifiers use liquid and solid hydrocarbons as the primary raw material. We mitigate electricity, natural gas, and hydrocarbon price fluctuations contractually through pricing formulas, surcharges, cost pass-through provisions, and tolling arrangements.

Our regional industrial gas segments include our share of the results of several joint ventures accounted for under the equity method. The largest of these joint ventures operate in China, India, Italy, Mexico, Saudi Arabia, South Africa, and Thailand.

Each of the regional industrial gases segments competes against global industrial gas companies as well as regional competitors. Competition in industrial gases is based primarily on price, reliability of supply, and the development of industrial gas applications. We derive a competitive advantage in locations where we have pipeline networks, which enable us to provide reliable and economic supply of products to our larger customers.

Corporate and other

The Corporate and other segment includes sales of cryogenic and gas processing equipment for air separation that is sold worldwide to customers in a variety of industries, including chemical and petrochemical manufacturing, oil and gas recovery and processing, and steel and primary metals processing. Our Corporate and other segment also includes the results of our liquefied natural gas ("LNG"), turbo machinery equipment and services, and distribution sale of equipment businesses. Competition for our sale of equipment businesses is based primarily on technological performance, service, technical know-how, price, and performance guarantees.

Our Corporate and other segment also incurs costs to provide corporate support functions and global management activities that benefit all segments. These costs include those for product development, research and development, and administrative support. The results of our Corporate and other segment also include income and expense not directly associated with the regional segments, such as foreign exchange gains and losses.

In addition to assets of the global businesses included in this segment, other assets include cash and cash items, short-term investments, deferred tax assets, and financial instruments.

Customers

We do not have a homogeneous customer base or end market, and no single customer accounts for more than 10% of our consolidated sales.

Business Segment Information

	Americas	Asia	Europe	Middle East and India	Corporate and other	Total
2023						
Sales	$5,369.3	$3,216.1	$2,963.1	$162.5	$889.0	$12,600.0 (A)
Operating income (loss)	1,439.7	906.5	663.4	16.9	(287.3)	2,739.2 (B)
Depreciation and amortization	649.3	433.5	196.2	27.5	51.8	1,358.3
Equity affiliates' income	109.2	29.7	102.5	349.8	13.1	604.3 (B)
Expenditures for long-lived assets	2,033.7	663.4	482.4	1,312.7	134.2	4,626.4
Investments in net assets of and advances to equity affiliates	476.9	285.2	504.9	3,265.2	85.6	4,617.8
Total assets	9,927.5	7,009.6	4,649.8	5,708.4	4,707.2	32,002.5
2022						
Sales	$5,368.9	$3,143.3	$3,086.1	$129.5	$970.8	$12,698.6 (A)
Operating income (loss)	1,174.4	898.3	503.4	21.1	(184.7)	2,412.5 (B)
Depreciation and amortization	629.5	436.5	195.2	26.9	50.1	1,338.2
Equity affiliates' income	98.2	22.1	78.2	293.9	3.9	496.3 (B)
Expenditures for long-lived assets	1,353.1	779.2	312.6	271.6	210.0	2,926.5
Investments in net assets of and advances to equity affiliates	434.4	268.9	435.0	2,143.3	72.2	3,353.8
Total assets	8,237.7	6,968.7	3,645.1	2,980.7	5,360.4	27,192.6
2021						
Sales	$4,167.6	$2,920.8	$2,345.6	$99.3	$789.7	$10,323.0 (A)
Operating income (loss)	1,065.5	838.3	529.4	28.0	(193.4)	2,267.8 (B)
Depreciation and amortization	611.9	444.4	204.5	25.3	35.2	1,321.3
Equity affiliates' income	112.5	35.9	62.8	76.4	6.5	294.1 (B)
Expenditures for long-lived assets	909.6	792.3	300.3	71.0	391.0	2,464.2

(A) Sales relate to external customers only. All intersegment sales are eliminated in consolidation.

(B) Refer to the *Reconciliations to Consolidated Results* section below.

Reconciliations to Consolidated Results

Operating Income

The table below reconciles total operating income disclosed in the table above to consolidated operating income as reflected on our consolidated income statements:

Fiscal Year Ended 30 September	**2023**	2022	2021
Total	**$2,739.2**	$2,412.5	$2,267.8
Facility closure	**—**	—	(23.2)
Business and asset actions	**(244.6)**	(73.7)	—
Gain on exchange with joint venture partner	**—**	—	36.8
Consolidated Operating Income	**$2,494.6**	$2,338.8	$2,281.4

Equity Affiliates' Income

The table below reconciles total equity affiliates' income disclosed in the table above to consolidated equity affiliates' income as reflected on our consolidated income statements:

Fiscal Year Ended 30 September	**2023**	2022	2021
Total	**$604.3**	$496.3	$294.1
Equity method investment impairment charge	**—**	(14.8)	—
Consolidated Equity Affiliates' Income	**$604.3**	$481.5	$294.1

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Geographic Information

The geographic information presented below is based on country of origin.

Sales to External Customers

Fiscal Year Ended 30 September	2023	2022	2021
United States	**$5,234.2**	$5,230.2	$3,895.8
China	**1,988.1**	1,989.8	1,828.0
Other foreign operations	**5,377.7**	5,478.6	4,599.2
Total	**$12,600.0**	$12,698.6	$10,323.0

Long-Lived Assets(A)

30 September	2023	2022	2021
United States	**$7,431.0**	$6,022.0	$5,187.8
China	**3,744.7**	3,886.0	4,137.7
Saudi Arabia	**1,818.1**	595.7	29.0
Other foreign operations	**4,478.3**	3,656.8	3,900.1
Total	**$17,472.1**	$14,160.5	$13,254.6

(A) "Long-lived assets" represents plant and equipment, net.

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

Not applicable.

Item 9A. 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, our management conducted an evaluation of the effectiveness of our disclosure controls and procedures as of 30 September 2023. Based on that evaluation, the Chief Executive Officer and Chief Financial Officer concluded that, as of 30 September 2023, the disclosure controls and procedures were effective.

Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act). Management has evaluated the effectiveness of our internal control over financial reporting as of 30 September 2023 based on criteria established in Internal Control—Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO"). Based on that evaluation, management concluded that, as of 30 September 2023, our internal control over financial reporting was effective. Management's Report on Internal Control over Financial Reporting is provided under Part II, Item 8, of this Form 10-K.

There was no change in our internal control over financial reporting during the fourth quarter of fiscal year 2023 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Deloitte & Touche LLP, our independent registered public accounting firm, has audited our internal control over financial reporting as of 30 September 2023. The Report of the Independent Registered Public Accounting Firm is provided under Part II, Item 8, of this Form 10-K.

Item 9B. Other Information

None of the Company's directors or Section 16 reporting officers adopted or terminated any Rule 10b5-1 trading arrangement or non-Rule 10b5-1 trading arrangement (as such terms are defined in Item 408 of Regulation S-K) during the fourth quarter of fiscal year 2023.

Item 9C. Disclosure Regarding Foreign Jurisdictions That Prevent Inspections

Not applicable.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

The information required by this item relating to our directors and nominees is incorporated herein by reference to the section captioned “The Board of Directors” in the Proxy Statement for the Annual Meeting of Shareholders to be held on 25 January 2024. The information required by this item relating to our executive officers is set forth in Part I, Item 1. *Business* of this Form 10-K.

The information required by this item relating to our Audit and Finance Committee and our Audit and Finance Committee Financial Expert is incorporated herein by reference to the sections captioned “Board Structure–Standing Committees of the Board” in the Proxy Statement for the Annual Meeting of Shareholders to be held on 25 January 2024.

The information required by this item relating to our procedures regarding the consideration of candidates recommended by shareholders and a procedure for submission of such candidates is incorporated herein by reference to the section captioned “The Board of Directors–Selection of Directors” in the Proxy Statement for the Annual Meeting of Shareholders to be held on 25 January 2024.

The information required by this item relating to Section 16(a) Beneficial Ownership Reporting Compliance is incorporated herein by reference to the section captioned “Section 16(a) Beneficial Ownership Reporting” in the Proxy Statement for the Annual Meeting of Shareholders to be held on 25 January 2024.

We have adopted a Code of Conduct that applies to all employees, including the Chief Executive Officer, the Chief Financial Officer, and the Principal Accounting Officer. The Code of Conduct can be found at our website at www.airproducts.com/company/governance/code-of-conduct.

Item 11. Executive Compensation

The information required by this item is incorporated herein by reference to the sections captioned “Executive Compensation” and “Compensation of Directors” in the Proxy Statement for the Annual Meeting of Shareholders to be held on 25 January 2024.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

The information required by this item is incorporated herein by reference to the sections captioned "Information About Stock Ownership" and “Equity Compensation Plan Information” in the Proxy Statement for the Annual Meeting of Shareholders to be held on 25 January 2024.

Item 13. Certain Relationships and Related Transactions, and Director Independence

The information required by this item is incorporated herein by reference to the sections captioned “The Board of Directors–Director Independence” and “Board Practices, Processes and Policies–Transactions with Related Persons” in the Proxy Statement for the Annual Meeting of Shareholders to be held on 25 January 2024.

Item 14. Principal Accountant Fees and Services

The information required by this item is incorporated herein by reference to the section captioned “Fees of Independent Registered Public Accounting Firm” in the Proxy Statement for the Annual Meeting of Shareholders to be held on 25 January 2024.

PART IV

Item 15. Exhibits and Financial Statement Schedules

(a) The following documents are filed as a part of this report:

(1) *Financial Statements.*

The following is a list of the Consolidated Financial Statements of Air Products and Chemicals, Inc. and its subsidiaries included in Part II, Item 8. *Financial Statements and Supplementary Data*:

(2) *Financial Statement Schedules.*

Financial statement schedules are omitted as they are either not required or the information is otherwise included in the consolidated financial statements or notes thereto.

(3) *Exhibits.*

The exhibits filed as a part of this report as required by Item 601 of Regulation S-K are listed in the Index to Exhibits beginning on page 120.

Item 16. Form 10-K Summary

None.

INDEX TO EXHIBITS

Exhibit No.	Description
(3)	Articles of Incorporation and Bylaws.
3.1	Restated Certificate of Incorporation of the Company. (Filed as Exhibit 3.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended 30 June 2023.)*
3.2	Amended and Restated Bylaws of the Company. (Filed as Exhibit 3.1 to the Company's Current Report on Form 8-K dated 17 September 2023.)*
(4)	Instruments defining the rights of security holders, including indentures. Upon request of the Securities and Exchange Commission, the Company hereby undertakes to furnish copies of the instruments with respect to its long-term debt.
4.1	Indenture, dated as of 10 January 1995, between the Company and The Bank of New York Trust, N.A. (formerly Wachovia Bank, National Association and initially First Fidelity Bank Company, National Association), as Trustee. (Filed as Exhibit 4(a) to the Company's Registration Statement on Form S-3 filed 19 January 1995, File No. 033-57357.)*
4.2	Indenture, dated as of 30 April 2020, between the Company and The Bank of New York Trust Company, N.A., as Trustee. (Filed as Exhibit 4.1 to the Company's Current Report on Form 8-K filed 30 April 2020.)*
4.3	Description of Securities.
(10)	Material Contracts.
10.1	Amended and Restated Long-Term Incentive Plan of the Company effective 1 October 2014. (Filed as Exhibit 10.1 to the Company's Current Report on Form 8-K filed on 23 September 2014.)*†
10.2	Air Products and Chemicals, Inc. 2021 Long-Term Incentive Plan. (Filed as Exhibit 4.5 to the Company's Registration Statement on Form S-8 (File No. 333-252722) filed on 4 February 2021.)*†
10.2(a)	Form of Restricted Stock Unit Award Agreement under the Long-Term Incentive Plan of the Company, used for FY2021 awards. (Filed as Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended 31 December 2020.)*†
10.2(b)	Form of Performance Share Award Agreement under the Long-Term Incentive Plan of the Company, used for FY2021 awards. (Filed as Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q for the quarter ended 31 December 2020.)*†
10.2(c)	Form of Restricted Stock Unit Award Agreement under the Long-Term Incentive Plan of the Company, used for FY2022 awards. (Filed as Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended 31 December 2021.)*†
10.2(d)	Form of Performance Share Award Agreement under the Long-Term Incentive Plan of the Company, used for FY2022 awards. (Filed as Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q for the quarter ended 31 December 2021.)*†
10.2(e)	Form of Restricted Stock Unit Award Agreement under the Long-Term Incentive Plan of the Company, used for FY2023 Awards. (Filed as Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended 31 December 2022.)*†
10.2(f)	Form of Performance Share Award Agreement under the Long-Term Incentive Plan of the Company, used for FY2023 Awards. (Filed as Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q for the quarter ended 31 December 2022.)*†
10.3	Air Products and Chemicals, Inc. Retirement Savings Plan as amended and restated effective 1 January 2022. (Filed as Exhibit 10.3 to the Company's Quarterly Report on Form 10-Q for the quarter ended 31 December 2021.)*†
10.3(a)	Amendment No. 1 to the Air Products and Chemicals, Inc. Retirement Savings Plan as amended and restated effective 1 January 2022. (Filed as Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended 30 June 2022.)*†
10.4	Supplementary Pension Plan of Air Products and Chemicals, Inc. as Amended and Restated effective 1 August 2014. (Filed as Exhibit 10.10 to the Company's Annual Report on Form 10-K for the fiscal year ended 30 September 2014.)*†

INDEX TO EXHIBITS

Exhibit No.	Description
10.4(a)	Amendment No. 1 dated as of 30 September 2015 to the Supplementary Pension Plan of Air Products and Chemicals, Inc. as Amended and Restated effective 1 August 2014. (Filed as Exhibit 10.10(a) to the Company's Annual Report on Form 10-K for the fiscal year ended 30 September 2015.)*†
10.4(b)	Amendment No. 2 dated as of 30 September 2016 to the Supplementary Pension Plan of Air Products and Chemicals, Inc. as Amended and Restated effective 1 August 2014. (Filed as Exhibit 10.7(b) to the Company's Annual Report on Form 10-K for fiscal year ended 30 September 2016.)*†
10.4(c)	Amendment No. 3 dated as of 26 July 2017 to the Supplementary Pension Plan of Air Products and Chemicals, Inc. as Amended and Restated effective 1 August 2017.(Filed as Exhibit 10.7(c) to the Company's Annual Report on Form 10-K for the fiscal year ended 30 September 2017.)*†
10.5	Deferred Compensation Plan as Amended and Restated effective 1 January 2018. (Filed as Exhibit 10.5 to the Company's Quarterly Report on Form 10-Q for the quarter ended 31 December 2017.)*†
10.6	Air Products and Chemicals, Inc. Executive Separation Program as amended effective as of 1 October 2022. (Filed as Exhibit 10.6 to the Company’s Annual Report on Form 10-K for the year ended 30 September 2022.)*†
10.7	Air Products and Chemicals, Inc. Senior Management Severance Plan and Summary Plan Description effective 1 August 2022. (Filed as Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q for the quarter ended 30 June 2022.)*†
10.8	Form of Change in Control Severance Agreement for an Executive Officer. (filed as Exhibit 10.2 of the Company's Current Report on Form 8-K dated 23 September 2014.)*†
10.9	Amended and Restated Employment Agreement, dated 17 May 2023, between Air Products and Chemicals, Inc. and Seifollah Ghasemi (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K, filed on 18 May 2023.)*†
10.10	Compensation Programs for Nonemployee Directors effective 22 November 2022. (Filed as Exhibit 10.10 to the Company’s Annual Report on Form 10-K for the year ended 30 September 2022.)*†
10.11	Deferred Compensation Program for Directors, effective 7 October 2019. (Filed as Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for quarter ended 31 December 2019.)*†
10.12	Revolving Credit Agreement dated as of 31 March 2021 for $2,500,000,000. (Filed as Exhibit 10.1 to the Company’s Quarterly Report on Form 10-Q for the quarter ended 31 March 2021.)*
10.12(a)	Amendment to the Revolving Credit Agreement dated as of 29 September 2021. (Filed as Exhibit 10.13(a) to the Company's Annual Report on Form 10-K for the fiscal year ended 30 September 2021.)*
10.12(b)	Amendment No. 2 to the Revolving Credit Agreement dated as of 31 March 2022. (Filed as Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended 31 March 2022.)*
(21)	Subsidiaries of the Registrant.
21.1	Subsidiaries of the Registrant.
(23)	Consents of Experts and Counsel.
23.1	Consent of Independent Registered Public Accounting Firm.
(24)	Power of Attorney.
24.1	Power of Attorney.
(31)	Rule 13a-14(a)/15d-14(a) Certifications.
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.

INDEX TO EXHIBITS

Exhibit No.	Description
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)	Section 1350 Certifications.
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.††
(97)	Policy Relating to Recovery of Erroneously Awarded Compensation.
97.1	Air Products and Chemicals, Inc. Compensation Recoupment Policy and Supplemental Executive Officer Recoupment Policy, effective as of 1 October 2023.
(101)	Interactive Data Files.
101.INS	Inline 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	Inline XBRL Taxonomy Extension Schema Document.
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document.
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document.
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document.
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document.
104	Cover Page Interactive Data File, formatted in Inline XBRL (included in Exhibit 101).

* Previously filed as indicated and incorporated herein by reference. Exhibits incorporated by reference are located in SEC File No. 001-04534 unless otherwise indicated.

† Indicated management contract or compensatory arrangement.

†† The certification attached as Exhibit 32.1 that accompanies this Annual Report on Form 10-K, is not deemed filed with the SEC 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-K, irrespective of any general incorporation language contained in such filing.

SIGNATURES

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

AIR PRODUCTS AND CHEMICALS, INC.
(Registrant)

By: /s/ Melissa N. Schaeffer
Melissa N. Schaeffer
Senior Vice President and Chief Financial Officer
(Principal Financial Officer)

Date: 16 November 2023

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

Signature and Title	Date
/s/ Seifi Ghasemi (Seifi Ghasemi) Director, Chairman, President, and Chief Executive Officer (Principal Executive Officer)	16 November 2023
/s/ Jeffrey J. Kutz (Jeffrey J. Kutz) Vice President, Corporate Controller, and Principal Accounting Officer	16 November 2023
* (Tonit M. Calaway) Director	16 November 2023
* (Charles I. Cogut) Director	16 November 2023
* (Lisa A. Davis) Director	16 November 2023
* (David H. Y. Ho) Director	16 November 2023

Signature and Title	Date
* (Edward L. Monser) Director	16 November 2023
* (Matthew H. Paull) Director	16 November 2023
* (Wayne T. Smith) Director	16 November 2023

* Sean D. Major, Executive Vice President, General Counsel and Secretary, by signing his name hereto, does sign this document on behalf of the above noted individuals, pursuant to a power of attorney duly executed by such individuals, which is filed with the Securities and Exchange Commission herewith.

/s/ Sean D. Major

Sean D. Major

Executive Vice President, General Counsel and Secretary

Date: 16 November 2023

Exhibit 4.3

AIR PRODUCTS AND CHEMICALS, INC.
DESCRIPTION OF SECURITIES REGISTERED
UNDER SECTION 12 OF THE SECURITIES EXCHANGE ACT OF 1934

As of November 16, 2023, Air Products and Chemicals, Inc. (the "Company") has five classes of securities registered under Section 12 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"): (1) our common stock; (2) our 1.000% Euro Notes due 2025; (3) our 0.500% Euro Notes due 2028; (4) our 0.800% Euro Notes due 2032; and (5) our 4.000% Euro Notes due 2035.

Description of Common Stock

The following is a description of the general terms of the shares of our common stock. This description does not include all of the terms of our common stock and should be read together with our Restated Certificate of Incorporation (our "Certificate of Incorporation") and our Amended and Restated Bylaws (our "Bylaws"), each of which are incorporated by reference as an exhibit to the Annual Report on Form 10-K of which this Exhibit is a part, and applicable provisions of the General Corporation Law of the State of Delaware (the "DGCL"). We encourage you to read our Certificate of Incorporation, our Bylaws and the applicable provisions of the DGCL, for additional information.

General

We are authorized to issue up to 300,000,000 shares of common stock, par value $1.00 per share ("common stock"), and up to 25,000,000 shares of preferred stock, par value $1.00 per share. Our common stock is listed on the New York Stock Exchange under the symbol "APD."

Voting

Each holder of common stock is entitled to one vote per share on all matters requiring a vote of the stockholders. A majority of the votes cast is required for stockholders to elect directors in uncontested elections, while in contested elections directors are elected by a plurality of the votes cast. All other matters put to a stockholder vote generally require the approval of a majority of the shares entitled to vote on the matter and present in person or represented by proxy. Stockholders do not have cumulative voting rights.

Dividends

Holders of common stock are entitled to receive dividends, in cash, securities, or property, as may from time to time be declared by our board of directors, subject to the rights of the holders of any outstanding preferred stock.

Rights Upon Liquidation

In the event of our voluntary or involuntary liquidation, dissolution, or winding up, the holders of common stock will be entitled to share equally in our assets available for distribution after payment in full of all debts and after the holders of any outstanding preferred stock have received their liquidation preferences (including accrued and unpaid dividends) in full.

Statutory Provisions

Section 203 of the DGCL prohibits a defined set of transactions between a Delaware corporation and an interested stockholder. An interested stockholder is generally defined as a person who, together with any affiliates or associates of such person, beneficially owns, directly or indirectly, 15% or more of the outstanding voting shares of a corporation. This provision may prohibit business combinations between an interested stockholder and a corporation for a period of three years after the date the interested stockholder becomes an interested stockholder. The term business combination is broadly defined to include mergers, consolidations, sales or other dispositions of assets of the corporation or of any direct or indirect majority-owned subsidiary which assets have an aggregate market value equal to 10% or more of either the aggregate market value of all the assets of the corporation determined on a consolidated basis or the aggregate market value of all the outstanding stock of the corporation, and some other transactions that would increase the interested stockholder's proportionate share ownership in the corporation.

This prohibition is effective unless:

- the business combination or the transaction which resulted in the stockholder becoming an interested stockholder is approved by the corporation's board of directors prior to the time the interested stockholder becomes an interested stockholder;

- the interested stockholder acquired at least 85% of the voting stock of the corporation, other than stock held by directors who are also officers or by qualified employee stock plans in which employee participants do not have the right to determine confidentially whether shares held subject to the plan will be tendered in a tender or exchange offer, in the transaction in which it becomes an interested stockholder; or

- the business combination is approved by a majority of the board of directors and authorized at an annual or special meeting of stockholders, and not by written consent, by the affirmative vote of at least 66 2/3% of the outstanding voting stock which is not owned by the interested stockholder.

Certificate of Incorporation and Bylaw Provisions

Vacancies, and newly-created directorships resulting from any increase in the size of our board, may be filled by a majority vote of all remaining directors, even if the directors then on the board do not constitute a quorum or only one director is left in office. In addition, the board of directors is authorized to issue preferred stock without stockholder approval. These provisions, together with the provisions of Section 203 of the DGCL (as discussed above), could have the effect of delaying, deferring or preventing a change in control or the removal of existing management, of deterring potential acquirers from making an offer to our stockholders and of limiting any opportunity to realize premiums over prevailing market prices for our common stock in connection therewith. This could be the case even if a majority of our stockholders could benefit from such a change in control or offer.

In addition, our Bylaws contain a forum selection provision for the adjudication of certain disputes. Unless we consent in writing to the selection of an alternative forum, the sole and exclusive forum for (a) any derivative action or proceeding brought on our behalf; (b) any action asserting a claim of breach of a fiduciary duty owed by any of our directors, officers or other employees to us or our stockholders; (c) any action asserting a claim arising pursuant to any provision of the DGCL, our Certificate of Incorporation or Bylaws; or (d) any action asserting a claim governed by the internal affairs doctrine will be the Court of Chancery of the State of Delaware, or, if the Court of Chancery of the State of Delaware does not have jurisdiction, the Superior Court of the State of Delaware, or, if the Superior Court of the State of Delaware does not have jurisdiction, the United States District Court for the District of Delaware, in each case, subject to said court having personal jurisdiction over the indispensable parties named as defendants. If any action the subject matter of which is within the scope of the forgoing is filed in a court other than a court located within the State of Delaware in the name of any stockholder, such stockholder shall be deemed to have consented to (i) the personal jurisdiction of the state and federal courts located within the State of Delaware in connection with any action brought in any such court to enforce our forum selection clause and (ii) having service of process made upon such stockholder in any such enforcement action by service upon such stockholder’s counsel in such action as agent for such stockholder. Any person or entity purchasing or otherwise acquiring any interest in shares of our capital stock will be deemed to have notice of and consented to the forum selection provision of our Bylaws.

As discussed above, our Certificate of Incorporation authorizes the issuance of undesignated preferred stock, in one or more classes or series. Undesignated preferred stock may enable our board of directors to render it more difficult or to discourage an attempt to obtain control of us by means of a tender offer, proxy contest, merger or otherwise, and to thereby protect the continuity of our management. The issuance of shares of preferred stock may adversely affect the rights of the holders of our common stock. For example, any preferred stock issued may rank prior to our common stock as to dividend rights, liquidation preference or both, may have full or limited voting rights and may be convertible into shares of common stock. As a result, the issuance of shares of preferred stock may discourage bids for our common stock or may otherwise adversely affect the market price of our common stock or any existing preferred stock. In some instances the preferred stock could be issued and have the effect of preventing a merger, tender offer or other takeover attempt that our board of directors opposes.

Miscellaneous

Shares of our common stock are non-assessable and not redeemable and have no sinking fund provisions or subscription, conversion or preemptive rights.

The rights, preferences and privileges of holders of our common stock are subject to the rights of the holders of shares of any series of preferred stock which we may issue.

Transfer Agent

The transfer agent for our common stock is Broadridge Corporate Issuer Solutions, Inc.

Description of Notes

The following description of our 1.000% Euro Notes due 2025 (the "2025 Notes"), our 0.500% Euro Notes due 2028 (the "2028 Notes"), our 0.800% Euro Notes due 2032 (the "2032 Notes") and our 4.000% Euro Notes due 2035 (the "2035 Notes" and, together with the 2025 Notes, the 2028 Notes and the 2032 Notes, the "Notes") is a summary and does not purport to be complete. The description of the 2025 Notes is subject to and qualified in its entirety by reference to the Indenture, dated as of January 10, 1995, between the Company and The Bank of New York Mellon Trust Company, N.A., as successor trustee (the "1995 Indenture"), and the description of the 2028 Notes, the 2032 Notes and the 2035 Notes is subject to and qualified in its entirety by reference to the Indenture, dated as of April 30, 2020, between the Company and The Bank of New York Mellon Trust Company, N.A. (the "2020 Indenture" and, together with the 1995 Indenture, the "Indentures").

The Terms of the 2025 Notes are governed by the 1995 Indenture, as supplemented by the Officers' Certificate, dated February 12, 2015 (the "2015 Officers' Certificate"). The terms of the 2028 Notes and the 2032 Notes are governed by the 2020 Indenture, as supplemented by the Officer's Certificate, dated May 5, 2020 (the "2020 Officer's Certificate"). The terms of the 2035 Notes are governed by the 2020 Indenture, as supplemented by the Officer's Certificate, dated March 3, 2023 (the "2023 Officer's Certificate" and, together with the 2015 Officers' Certificate and the 2020 Officer's Certificate, the "Certificates"). We encourage you to read the above referenced Indentures, as supplemented by the Certificates, for additional information.

General

The following table briefly summarizes certain key terms of the Notes.

	2025 Notes	2028 Notes	2032 Notes	2035 Notes
Principal	€300,000,000	€500,000,000	€500,000,000	€700,000,000
Interest Rate	1.000% per year	0.500% per year	0.800% per year	4.000% per year
Issuance Date	February 12, 2015	May 5, 2020	May 5, 2020	March 3, 2023
Interest Payment Date	Annually on February 12, commencing February 12, 2016	Annually on May 5, commencing May 5, 2021	Annually on May 5, commencing May 5, 2021	Annually on March 3, commencing March 3, 2024
Maturity Date	February 12, 2025	May 5, 2028	May 5, 2032	March 3, 2035
Trading Symbol	APD25	APD28	APD32	APD35

The Notes were issued on the dates, in the amounts and subject to the terms stated in the table above. Each series of Notes was issued in a form of one or more fully registered global securities, without coupons, in denominations of €100,000 in principal amount and integral multiples of €1,000 in excess thereof.

Each series of Notes represents our senior unsecured obligations and rank equally with our other unsecured and unsubordinated debt from time to time outstanding. The Notes will not benefit from any sinking fund.

We are permitted to issue additional Notes of each series without the consent of the holders of that series of Notes. As of November 16, 2023 no such additional Notes have been issued.

Each series of Notes is listed on The New York Stock Exchange under the bond trading symbols stated in the table above.

Interest and Principal

Each series of Notes bears interest from the date of initial issuance at the fixed rate and on the dates stated in the table above. Interest on the 2025 Notes, the 2028 Notes and the 2032 Notes is payable to the person in whose name such Note is registered at the close of business on the 15th calendar day prior to the applicable interest payment date. Interest on the 2035 Notes is payable to the person in whose name such Note is registered at the close of business on the clearing system business day immediately preceding each interest payment date.

Interest is computed on the basis of the actual number of days in the period for which interest is being calculated and the actual number of days from and including the last date on which interest was paid on the Notes (or the original issuance date, if no interest has been paid), to but excluding the next scheduled interest payment date. This payment convention is referred to as ACTUAL/ACTUAL (ICMA) as defined in the rulebook of the International Capital Markets Association.

If any interest payment date falls on a day that is not a business day, the interest payment will be postponed to the next day that is a business day, and no interest on such payment will accrue for the period from and after such interest payment date. If the maturity date or date fixed for redemption of any series of Notes falls on a day that is not a business day, the payment of interest and principal shall be made on the next succeeding business day, and no interest on such payment will accrue for the period from and after the maturity date.

Optional Redemption

2025 Notes

We may redeem the 2025 Notes, in whole or in part, prior to November 12, 2024 at a redemption price equal to the greater of (i) 100% of the principal amount of the 2025 Notes being redeemed or (ii) the sum of the present values of the remaining scheduled payments of principal and interest thereon from the redemption date to the applicable maturity date (exclusive of any accrued interest) discounted to the redemption date on an annual basis (ACTUAL/ACTUAL (ICMA)) using a discount rate equal to the Comparable Government Bond Rate (as defined in the 2015 Officers' Certificate) plus 15 basis points, plus, in each case, any interest accrued but not paid to the date of redemption.

On or after November 12, 2024, the 2025 Notes will be redeemable at our option at a redemption price equal to 100% of the principal amount of the 2025 Notes being redeemed plus accrued and unpaid interest on the principal amount being redeemed to, but excluding, the redemption date.

2028 Notes

We may redeem the 2028 Notes, in whole or in part, prior to February 5, 2028 at a redemption price equal to the greater of (i) 100% of the principal amount of the 2028 Notes being redeemed or (ii) the sum of the present values of the remaining scheduled payments of principal and interest thereon that would be due if the 2028 Notes matured on February 5, 2028 (exclusive of any accrued interest) discounted to the redemption date on an annual basis (Actual/Actual (ICMA)) using a discount rate equal to the Comparable Government Bond Rate (as defined in the 2020 Officer's Certificate) plus 20 basis points, plus, in each case, any interest accrued but not paid to the date of redemption.

On or after February 5, 2028, the 2028 Notes will be redeemable at our option at a redemption price equal to 100% of the principal amount of the 2028 Notes being redeemed plus accrued and unpaid interest on the principal amount being redeemed to, but excluding, the redemption date.

2032 Notes

We may redeem the 2032 Notes, in whole or in part, prior to February 5, 2032 at a redemption price equal to the greater of (i) 100% of the principal amount of the 2032 Notes being redeemed or (ii) the sum of the present values of the remaining scheduled payments of principal and interest thereon that would be due if the 2032 Notes matured on February 5, 2032 (exclusive of any accrued interest) discounted to the redemption date on an annual basis (Actual/Actual (ICMA)) using a discount rate equal to the Comparable Government Bond Rate (as defined in the 2020 Officer's Certificate) plus 20 basis points, plus, in each case, any interest accrued but not paid to the date of redemption.

On or after February 5, 2032, the 2032 Notes will be redeemable at our option at a redemption price equal to 100% of the principal amount of the 2032 Notes being redeemed plus accrued and unpaid interest on the principal amount being redeemed to, but excluding, the redemption date.

2035 Notes

We may redeem the 2035 Notes, in whole or in part, prior to December 3, 2034 at a redemption price equal to the greater of (i) 100% of the principal amount of the 2035 Notes being redeemed or (ii) the sum of the present values of the remaining scheduled payments of principal and interest thereon that would be due if the 2035 Notes matured on December 3, 2034 (exclusive of any accrued interest) discounted to the redemption date on an annual basis (Actual/Actual (ICMA)) using a discount rate equal to the Comparable Government Bond Rate (as defined in the 2023 Officer's Certificate) plus 25 basis points, plus, in each case, any interest accrued but not paid to the date of redemption.

On or after December 3, 2034, the 2035 Notes will be redeemable at our option at a redemption price equal to 100% of the principal amount of the 2035 Notes being redeemed plus accrued and unpaid interest on the principal amount being redeemed to, but excluding, the redemption date.

Redemption Upon Tax Event

If, as a result of any change in, or amendment to, the laws of the United States or the official interpretation thereof that is announced or becomes effective, we become or, based upon a written opinion of independent counsel selected by us, there is a substantial probability that we will become obligated to pay certain additional amounts with respect to a series of Notes, then we may redeem, in whole, but not in part, the Notes of the affected series at a redemption price equal to 100% of their principal amount, together with accrued and unpaid interest on such Notes to, but excluding, the redemption date.

Redemption on Change of Control Triggering Event

With respect to each series of Notes, a "*Change of Control Triggering Event*" will be deemed to have occurred in the event of both a Change of Control and a Ratings Decline, as each term is defined in the applicable Certificate. Upon the occurrence of a Change of Control Triggering Event with respect to a series of Notes, we will be required to make an offer (a "Change of Control Offer") to the holders of such series to repurchase all or any part of such series at a purchase price equal to 101% of the aggregate principal amount thereof, together with accrued and unpaid interest thereon to the date of repurchase.

Except as described with respect to a Change of Control Triggering Event, the Indentures do not contain any provisions that permit the holders of the Notes to require that we repurchase or redeem the Notes in the event of a takeover, recapitalization or similar transaction.

Payment of Additional Amounts

We will, subject to certain exceptions and limitations, pay additional amounts on each series of Notes as is necessary in order that the net payment of the principal of and interest on such Notes to a holder who is not a United States person, after withholding or deduction for any present or future tax, assessment or other governmental charge imposed by the United States or a taxing authority in the United States, will not be less than the amount provided in such Notes to be then due and payable.

Events of Default

An "event of default" is defined in the Indentures as being any of the following events: (i) default for 30 days in the payment of any interest on the Notes of such series; (ii) default in the payment of principal or premium, if any, due on the Notes of any series; (iii) for the 2025 Notes, default in the payment of any sinking fund installment on the securities of such series, when due or, in the case of the 2028 Notes, 2032 Notes and 2035 Notes, default for 30 days in the payment of any sinking fund installment on the securities of such series, when due; (iv) default for 90 days in the performance of any other of the covenants or agreements in the Indentures (other than those set forth exclusively in the terms of any other series of securities); or (v) certain events of bankruptcy, insolvency and reorganization.

No event of default with respect to any particular series of Notes necessarily constitutes an event of default with respect to any other series of Notes.

The trustee must give notice of a default to the holders of the series of Notes on which the default exists within 90 days unless the default is cured or waived. However, except in the case of a default in the payment of the principal of, premium on, if any, or interest on any of the securities of such series or in the making of any sinking fund payment with respect to such series, the trustee may withhold this notice if the trustee considers it in the interest of the holders of the Notes of such series to do so. The trustee may not withhold notice in the event of a payment default with regard to principal, interest or a sinking fund.

If an event of default has occurred and is continuing and (a) in the case of the 2025 Notes, the event of default is as described in clause (i), (ii) or (iii) above or (b) in the case of the 2028 Notes, the 2032 Notes and the 2035 Notes, the event of default is as described in clause (i), (ii), (iii) or (iv) above, either the trustee or the holders of 25% in principal amount of the Notes of such series then outstanding may declare the principal of all such securities to be due and payable immediately.

If an event of default as described in clause (iv) or (v) above applies to the 2025 Notes, either the trustee or the holders of 25% in principal amount of all affected securities, voting as a single class, may declare the principal of all such securities to be due and payable immediately. If an event of default as described in clause (v) above applies to the 2028 Notes, 2032 Notes or 2035 Notes, then all securities issued under the 2020 Indenture shall automatically and without acceleration or other action on the part of the trustee or any holder, become immediately due and payable.

However, upon the occurrence of certain conditions specified in the applicable Indenture, past events of default may be waived by the holders of a majority of the aggregate principal amount of the affected securities, except for defaults in the payment of principal of, or any premium or interest on, such Notes or with respect to any covenant or provision which may not be amended without the approval of each holder affected.

The holders of a majority in principal amount of the Notes of each series affected, voting as a separate class, may direct the time, method and place of conducting any proceeding for any remedy available to the trustee under the respective Indenture, subject to certain limitations specified in such Indenture, provided that the holders of securities shall have offered to the trustee reasonable indemnity against costs, expenses and liabilities.

We must certify to the trustee on a yearly basis as to the absence of certain defaults.

Modification of the Indentures

Together with the trustee, and subject to the consent of the holders of (a) in the case of the 2025 Notes, at least 66 2/3% of the outstanding principal amount of the outstanding Notes of all affected series, or (b) in the case of the 2028 Notes, 2032 Notes and 2035 Notes, a majority of the outstanding principal amount of the outstanding Notes of all affected series (voting separately), we may modify the respective Indenture or any supplement to such Indenture. Without the consent of each affected Note holder, we may not: (i) extend the final maturity; (ii) reduce the principal amount or rate of interest; (iii) extend the time of payment of interest; (iv) reduce the amount payable upon redemption; (v) reduce the amount of the principal of a discounted security payable upon acceleration of the maturity of the security or in the event of bankruptcy; (vi) impair the right to institute suit to enforce payment or repayment; or (vii) change the provisions in the Indenture that relate to its modification or amendment. Notwithstanding the foregoing, the Indentures permit us, together with the trustee, to make certain specified changes to the respective Indentures without obtaining the consent of the holders of any series of Notes issued thereunder.

Discharge and Defeasance

We may discharge certain obligations to holders with respect to each series of the Notes by irrevocably depositing money or certain securities with the trustee in an amount to pay the entire indebtedness on such securities when due and by satisfying certain additional conditions set forth in the Indentures.

Trustee, Paying Agents and Security Registrar

The Bank of New York Mellon Trust Company, N.A. is the trustee under the Indentures governing the Notes. The Bank of New York Mellon, London Branch, is the paying agent for the notes in London.

We maintain deposit accounts and conduct other banking transactions with the trustee or an affiliate of the trustee in the ordinary course of business.

Governing Law

The Indentures and the Notes are governed by, and construed in accordance with, the laws of the State of New York.

Exhibit 21.1

Subsidiaries of Air Products and Chemicals, Inc.

Registrant -- Air Products and Chemicals, Inc.

UNITED STATES

All companies are incorporated in the State of Delaware unless otherwise indicated.

7001 Hamilton Properties, LLC
Air Products Advanced Materials LLC
Air Products Ammonia Distribution, LLC
Air Products Ammonia Holdings, LLC
Air Products and Chemicals, Inc. of Utah (Utah)
Air Products Asia, Inc.
Air Products Blue Energy LLC
Air Products Caribbean Holdings, Inc.
Air Products China, Inc.
Air Products Helium, Inc.
Air Products Hydrogen Company, Inc.
Air Products Industrial Gas LLC
Air Products International, LLC
Air Products Investments Holdings, LLC
Air Products Investments, LLC
Air Products LLC
Air Products Manufacturing Corporation
Air Products Manufacturing LLC
Air Products West Coast Hydrogen LLC
APCI (U.K.), Inc.
APMTG Helium LLC
East Coast Nitrogen Company LLC
East Coast Oxygen Co.
EPCO Carbondioxide Products, Inc. (Illinois)
Felix 4, LLC
Felix DevCo LLC
Felix Holding Company II, LLC
Gardner Cryogenics, Inc. (Pennsylvania)
Harvest Energy Technology, Inc. (California)
Indura Holdings Colombia, LLC
Olin - DNT Limited Partnership
Permea, Inc.
ProCal (California)
Prodair Corporation
SCWC Corp.
Stravinsky Investments LLC
The Former SR Manufacturers Inc. (Colorado)

ALGERIA

Helios S.p.A.

ARGENTINA

Indura Argentina S.A.

AUSTRIA

Air Products Gesellschaft mbH

BAHRAIN

Air Products Bahrain W.L.L
Middle East Carbon Dioxide W.L.L. (MECD)

BELGIUM

ACP Zolder Invest NV
Air Products Management BV/SRL
Air Products NV/SA
Napro S.A.

BERMUDA

Asia Industrial Gas Company Ltd.

BRAZIL

Air Products Brasil Ltda.

CANADA

Air Products Canada Ltd./Prodair Canada Ltee
Air Products Ammonia Distribution Ltd.

CHILE

AP Services South America SpA
Centro Técnico Indura Limitada
Indura Inversiones Limitada
Indura S.A.
Indura Sociedad Comercial Limitada
Inversiones Air Products Holdings Limitada
Oxigeno Medicinal Domiciliario Limitada
Servicios Indura Limitada

CHINA

Air Products (Beijing) Hydrogen Energy Technology Co., Ltd.
Air Products (Cangzhou) Co., Ltd.
Air Products (Changsha) Co., Ltd.
Air Products (Chongqing) Chem-Materials Co., Ltd.
Air Products (Dongguan) Gases Co., Ltd.
Air Products (Guangzhou) Electronics Gases Co., Ltd.
Air Products (Hangjin Qi) Co., Ltd.
Air Products (Hefei) Electronics Gases Co., Ltd
Air Products (Hong Kong) Co., Ltd.
Air Products (Huaian) Gases Co., Ltd.
Air Products (Huaibei) Gases Co., Ltd.
Air Products (Inner Mongolia) Hydrogen Energy Technology Co., Ltd.
Air Products (Jiangxi) Co., Ltd.
Air Products (Jiangxi) Co., Ltd. Jiujiang Branch
Air Products (Jincheng) Co., Ltd.
Air Products (Jinjiang) Electronics Gases Co., Ltd.
Air Products (Kunshan) Gases Co., Ltd, FuChunjiang Road Branch
Air Products (Kunshan) Gases Co., Ltd.
Air Products (Linfen) Co., Ltd.
Air Products (Nanjing) Electronics Gases Co., Ltd
Air Products (Ningbo) Hi-Tech Gases Co., Ltd.
Air Products (Qingdao) Gases Co., Ltd.
Air Products (Shandong) Engineering Co., Ltd.
Air Products (Shandong) Engineering Co., Ltd. Nanjing Branch
Air Products (Shanxi) Co., Ltd.
Air Products (Shenyang) Gases Co., Ltd.

Air Products (Shenzhen) Electronic Gases Co., Ltd.
Air Products (Tianjin) Co., Ltd.
Air Products (Wuhan) Gases Co., Ltd.
Air Products (Xia'men) Electronics Gases Co., Ltd.
Air Products (Xi'an) Gases Co., Ltd
Air Products (Zhengzhou) Hydrogen Energy Technology Co., Ltd.
Air Products (Zhongshan) Gases Co., Ltd.
Air Products (Zhumadian) Gases Co., Ltd.
Air Products and Chemicals (Anhui) Co., Ltd.
Air Products and Chemicals (Banan) Gases Co., Ltd
Air Products and Chemicals (Beijing) Distribution Co., Ltd.
Air Products and Chemicals (Binzhou) Co., Ltd.
Air Products and Chemicals (Chengdu) Co., Ltd.
Air Products and Chemicals (Chengdu) Co., Ltd. Qingbaijiang Branch
Air Products and Chemicals (China) Investment Co., Ltd.
Air Products and Chemicals (China) Investment Co., Ltd. Xi'an Branch
Air Products and Chemicals (Chongqing) Co., Ltd, Chang Shou Branch
Air Products and Chemicals (Chongqing) Co., Ltd.
Air Products and Chemicals (Dalian) Co., Ltd.
Air Products and Chemicals (Guangzhou) Co., Ltd.
Air Products and Chemicals (Guiyang) Co., Ltd.
Air Products and Chemicals (Hefei) Co., Ltd.
Air Products and Chemicals (Hohhot) Co., Ltd.
Air Products and Chemicals (Lianyungang) Gases Co., Ltd.
Air Products and Chemicals (Nanjing) Co., Ltd.
Air Products and Chemicals (Nanjing) Gases Co., Ltd.
Air Products and Chemicals (Pengzhou) Co., Ltd.
Air Products and Chemicals (Putian) Co., Ltd.
Air Products and Chemicals (Shaanxi Pucheng) Co., Ltd.
Air Products and Chemicals (Shaanxi) Co., Ltd.
Air Products and Chemicals (Shanghai) Co., Ltd.
Air Products and Chemicals (Shanghai) Electronics Gases Co., Ltd.
Air Products and Chemicals (Shanghai) Gases Co., Ltd.
Air Products and Chemicals (Shanghai) Gases Production Co., Ltd.
Air Products and Chemicals (Shanghai) Gasification Technology Co., Ltd.
Air Products and Chemicals (Shanghai) Hydrogen Energy Technology Co., Ltd.
Air Products and Chemicals (Shanghai) On-Site Gases Co., Ltd.
Air Products and Chemicals (Shanghai) Systems Co. Ltd.
Air Products and Chemicals (Shanghai) Systems Co. Ltd. Qingpu Branch
Air Products and Chemicals (Shangluo) Co., Ltd.
Air Products and Chemicals (Shenzhen) Co., Ltd.
Air Products and Chemicals (Shenzhen) Gases Co., Ltd.
Air Products and Chemicals (Shenzhen) Gases Co., Ltd. Guangming Branch
Air products and Chemicals (Shenzhen) Co.,Ltd. Longhua Branch
Air Products and Chemicals (Tangshan) Co., Ltd.
Air Products and Chemicals (Tianjin) Co., Ltd.
Air Products and Chemicals (Tongxiang) Co., Ltd.
Air Products and Chemicals (Weifang) Co., Ltd.
Air Products and Chemicals (Wuxi) Co., Ltd.
Air Products and Chemicals (WuXi) Gases Co., Ltd.
Air Products and Chemicals (Xi'an) Co., Ltd.
Air Products and Chemicals (Xi’an) Co., Ltd. First Branch
Air Products and Chemicals (Xingtai) Co., Ltd.
Air Products and Chemicals (Xinxiang) Co., Ltd.

Air Products and Chemicals (Xuzhou) Co., Ltd.
Air Products and Chemicals (Yichun) Co., Ltd.
Air Products and Chemicals (Yulin) Co., Ltd.
Air Products and Chemicals (Zhangjiagang) Co., Ltd.
Air Products and Chemicals (Zhejiang) Co., Ltd.
Air Products and Chemicals (Zhejiang) Co., Ltd. Hangzhou Branch
Air Products and Chemicals (Zhuhai) Co., Ltd.
Air Products and Chemicals (Zibo) Co., Ltd.
Air Products and Chemicals Tech Development (Beijing) Co., Ltd.
Air Products Debang (Lianyungang) Co., Ltd.
Air Products Huadong (Longkou) Co., Ltd.
Air Products Hydrogen Energy Technology (Zibo) Co., Ltd.
Air Products Jiutai (Inner Mongolia) Hydrogen Technology Co., Ltd.
Air Products Logistics (Zhejiang) Co., Ltd.
Air Products Lu'An (Changzhi) Co., Ltd.
Air Products SinoHytec (Beijing) Hydrogen Energy Technology Co., Ltd.
Beijing AP BAIF Gases Industry Co., Ltd.
Chengdu Air & Gas Products Ltd.
Chengzhi Air Products Hydrogen Energy Technology Co., Ltd.,
CNOOC Air Products and Chemicals (Fujian) Co., Ltd.
New Energy Air Products (Liaoning) Co., Ltd.
Permea China, Ltd.
WuXi Hi-Tech Gas Co., Ltd.

COLOMBIA

Gases Industriales de Colombia S.A. – Cryogas

CZECH REPUBLIC

Air Products spol s.r.o.

ECUADOR

Air Products Ecuador S.A.

EGYPT

Air Products Gases S.A.E.

FRANCE

Air Products SAS
Helap SAS
Lida SAS
Prodair et Cie S.C.S.
Prodair S.A.S.
Soprogaz SNC

GERMANY

Air Products Ammonia Distribution AD GmbH
Air Products GmbH
Air Products Holdings GmbH

INDIA

Prodair Air Products India Private Limited
INOX Air Products Pvt. Ltd.

INDONESIA

PT Air Products Indonesia
PT Air Products Indonesia Services
PT Air Products East Kalimantan

IRELAND

Air Products Ireland Limited

ISRAEL

Air Products Israel Ltd.
Gas Technologies, Ltd.

Oxygen & Argon Works, Ltd.

ITALY

Air Products Italia S.r.l.
Sapio Produzione Idrogeno Ossigeno S.r.l.

JAPAN

Air Products Japan K.K.

KOREA

Air Products Korea Inc.
Korea Industrial Gases, Ltd.

LUXEMBOURG

ACP Europe SA

MALAYSIA

Air Products Malaysia Sdn Bhd
Air Products Shared Services Sdn. Bhd
Air Products Specialized Process Equipment SDN
Kulim Industrial Gases Sdn Bhd

MEXICO

Air Products and Chemicals de Mexico, S.A. de C.V.
Grupo INFRA

MOROCCO

Air Products Maghreb S.A.R.L.

THE NETHERLANDS

Air Products Gases Holdings B.V.
Air Products Holdings B.V.
Air Products Investments B.V.
Air Products Leasing B.V.
Air Products Nederland B.V.
Air Products Netherlands Gases B.V.
Carbolim B.V.
KRIG Holdings B.V.

NIGERIA

Prodair Escravos Limited

NORWAY

Air Products A/S

OMAN

Air Products Majan LLC
AJWAA Gases LLC

PERU

Air Products Peru S.A.

POLAND

Air Products Sp. Z o.o.
Euro-Hel Sp. Z o.o.
STP & DIN Chemicals Sp. Z.o.o.

PORTUGAL

CVA Portugal LDA
Gasin II Unipessoal LDA
Sociedade Portuguesa de Oxigenio, Lda.

QATAR

Air Products Helium Inc. Qatar Branch
Air Products PLC – Qatar Branch

ROMANIA

Euro-Hel Romania SRL

SAUDI ARABIA

Abdulla Hashim Gases & Equipment Co. Limited
Air Products Middle East and Regional Headquarters (RHQ) Company
Air Products Middle East Industrial Gases LLC

Air Products PLC Branch
Air Products Qudra for Energy
Air Products Saudi Arabia Investment Company
Blue Hydrogen Industrial Gases Company
Gases Integrated Company Limited (GIC)
Jazan Gas Projects Company
Jazan Integrated Gasification and Power Company (JIGPC)
NEOM Green Hydrogen Company

SINGAPORE

Air Products Singapore Industrial Gases Pte. Ltd.

SLOVAKIA

Air Products Slovakia s.r.o.

SOUTH AFRICA

Air Products South Africa (Proprietary) Limited

SPAIN

Air Products Iberica, S.L.
Air Products Services Europe, S.A.
Andaluza de Gases, S.A.
Carb-IQA de Tarragona, S.L.
Carburos Via Augusta Logistics, S.L.
Iberica del Carbonico, S.A.
Matgas 2000 A.I.E.
Oxigeno de Sagunto, S.L.
Sociedad Espanola de Carburos Metalicos S.A.
Vitalox Industrial S.L.U.

SWITZERLAND

Air Products Switzerland Sàrl

TAIWAN, CHINA

Air Products San Fu Co., Ltd.
Air Products Taiwan Holdings Co., Ltd.

THAILAND

Bangkok Industrial Gas Co., Ltd.
Bangkok Cogeneration Company Limited

TRINIDAD AND TOBAGO

Caribbean Industrial Gases Unlimited

UKRAINE

Air Products Ukraina LLC
KRYVYI RIH Industrial Gas
PQ Ammonia

UNITED ARAB EMIRATES

AJWAA Emirates Gases Company LLC
Air Products Arabia for Industrial Gases LLC
Air Products (Middle East) FZE
Air Products Emirates Gases LLC
Air Products Gulf Gas LLC
Alemir Jebil Ali FTZ (Branch)
Alemir Sharjah FTZ (Branch)

UNITED KINGDOM

Air Products (BR) Limited
Air Products Equipment Limited
Air Products Group Limited
Air Products Llanwern Limited
Air Products PLC
Air Products Renewable Energy Limited
Cryoservice Limited
Gas Direct Cymru Cyf
Gas Direct Limited
SIG Industrial Gases Limited

UZBEKISTAN

Air Products Bukhara LLC
Air Products Central Asia Group LLC
Air Products Netherlands Gases P.E. (Branch)
Markaziy Osiyo Sanoat Gaz LLC

Exhibit 23.1

Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in Registration Statement Nos. 333-141336, 333-141337, 333-149813, 333-158102, 333-165563, 333-172889, 333-172890, 333-180122, 333-180123, 333-188643, 333-196000, 333-204387, 333-204388, 333-211476, 333-225016, 333-232847, 333-240038, and 333-252722 on Form S-8 and No. 333-250809 on Form S-3 of our report dated November 16, 2023, relating to the consolidated financial statements of Air Products and Chemicals, Inc. and subsidiaries, and the effectiveness of Air Products and Chemicals, Inc.'s internal control over financial reporting appearing in this Annual Report on Form 10-K of Air Products and Chemicals, Inc. for the year ended September 30, 2023.

/s/ Deloitte & Touche LLP
Philadelphia, Pennsylvania
November 16, 2023

Exhibit 24.1

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints SEIFI GHASEMI, MELISSA N. SCHAEFFER, and SEAN D. MAJOR, and each of them acting severally, his/her true and lawful attorney-in-fact and agent, with full power of substitution and resubstitution, for him/her and in his/her name, place and stead, in any and all capacities, to sign the Form 10-K Annual Report for the fiscal year ended 30 September 2023 and all amendments thereto and to file the same, with all exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, granting unto said attorney-in-fact and agent full power and authority to do and perform each and every act and thing requisite and necessary to be done in and about the premises, as fully to all intents and purposes as he/she might or could do in person, hereby ratifying and confirming all that said attorney-in-fact and agent, or substitute or substitutes, may lawfully do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities and Exchange Act of 1934, this Power of Attorney has been signed below by the following persons in the capacities and on the dates indicated.

Signature	Title	Date
/s/ Seifi Ghasemi Seifi Ghasemi	Director and Chairman of the Board, President and Chief Executive Officer (Principal Executive Officer)	November 16, 2023
/s/ Tonit M. Calaway Tonit M. Calaway	Director	November 16, 2023
/s/ Charles I. Cogut Charles I. Cogut	Director	November 16, 2023
/s/ Lisa A. Davis Lisa A. Davis	Director	November 16, 2023
/s/ David H. Y. Ho David H. Y. Ho	Director	November 16, 2023
/s/ Edward L. Monser Edward L. Monser	Director	November 16, 2023
/s/ Matthew H. Paull Matthew H. Paull	Director	November 16, 2023
/s/ Wayne T. Smith Wayne T. Smith	Director	November 16, 2023

Exhibit 31.1

PRINCIPAL EXECUTIVE OFFICER'S CERTIFICATION

I, Seifi Ghasemi, certify that:

1. I have reviewed this Annual Report on Form 10-K 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: 16 November 2023

/s/ Seifi Ghasemi

Seifi Ghasemi
Chairman, President and Chief Executive Officer

Exhibit 31.2

PRINCIPAL FINANCIAL OFFICER’S CERTIFICATION

I, Melissa N. Schaeffer, certify that:

1. I have reviewed this Annual Report on Form 10-K 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: 16 November 2023

/s/ Melissa N. Schaeffer

Melissa N. Schaeffer

Senior 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 Annual Report on Form 10-K of Air Products and Chemicals, Inc. (the “Company”) for the period ending 30 September 2023, 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 Melissa N. Schaeffer, Senior 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: 16 November 2023

/s/ Seifi Ghasemi
Seifi Ghasemi
Chairman, President, and Chief Executive Officer

/s/ Melissa N. Schaeffer
Melissa N. Schaeffer
Senior Vice President and Chief Financial Officer

AIR PRODUCTS AND CHEMICALS, INC.
COMPENSATION RECOUPMENT POLICY

The Management Development and Compensation Committee (the "Committee") of the Board of Directors (the "Board") of Air Products and Chemicals, Inc. (the "Company" and together with its subsidiaries, the "Company Group") believes that it is appropriate for the Company to adopt this Compensation Recoupment Policy (the "Recoupment Policy") to be applied to service providers of the Company who receive Incentive Compensation, and adopts this Recoupment Policy to be effective as of October 1, 2023 (the "Effective Date").

1. Definitions

For purposes of this Recoupment Policy, the following definitions shall apply:

(a) "Covered Conduct" means (i) a willful, knowing or intentional breach of any policy of the Company Group or any applicable legal or regulatory requirements in the course of the Covered Person's service to the Company Group (including at a Company Group-related event or involving Company Group personnel), (ii) actions or omissions resulting in significant reputational or financial harm to any member of the Company Group, including, without limitation, through lost sales or through penalties, fines or other costs, (iii) a breach of fiduciary duty to any member of the Company Group or (iv) willful misconduct, material dishonesty or fraud in the commission of a Covered Person's service to any member of the Company Group.

(b) "Covered Person" means any current or former employee or other service provider of the Company Group including, without limitation, any Executive Officer, who is or was a participant in any incentive compensation plan of the Company, including the Annual Incentive Plan and the 2021 Long-Term Incentive Plan, and any successor plans thereto.

(c) "Executive Officer" means each current and former "officer" of the Company as defined under Rule 16a-1(f) under Section 16 of the Securities Exchange Act of 1934 (the "Exchange Act"), which shall be deemed to include any individuals identified by the Company as executive officers pursuant to Item 401(b) of Regulation S-K under the Exchange Act.

(d) "Financial Reporting Error" means financial reporting measures of the Company or the Company Group that are either restated or determined to have been in error.

(e) "Incentive Compensation" means incentive compensation received by a Covered Person, whether cash- or equity-based, which may be discretionary or performance-based, but not including salary or vested tax-qualified employee retirement benefits.

2. Recoupment of Incentive Compensation

In the event that the Committee determines that any Covered Person has engaged in any Covered Conduct, the Committee may seek recovery of all or a portion of any Incentive Compensation, on a post- or pre-tax basis as determined by the Committee. The Committee may also provide that any unpaid or unvested Incentive Compensation awarded to a Covered Person is forfeited in connection with the Covered Person's Covered Conduct. The Committee may seek recovery of Incentive Compensation for Covered Conduct even if a person's Covered Conduct did not result in an award or payment greater than would have been awarded absent the Covered Conduct. In addition, if the Committee determines that a Financial Reporting Error has occurred (which may be based on input from the Board or another committee of the Board), the Committee may seek recovery or forfeiture of the portion of any Incentive Compensation that is determined by the Committee to have been incorrectly paid or awarded due to the Financial Reporting Error, without regard to whether the Covered Person's conduct contributed to the Financial Reporting Error.

3. Supplemental Executive Officer Recoupment Policy

In addition to this Recoupment Policy, each Executive Officer will also be subject to the Supplemental Executive Officer Recoupment Policy set forth on Exhibit A (the "Supplemental Policy").

4. Means of Repayment

In the event that the Committee determines that any Covered Person shall repay any Incentive Compensation, the Committee shall provide written notice to such person by email or certified mail to the physical address on file with the Company Group for such person, and the person shall satisfy such repayment in a manner and on such terms as required by the Committee, and the Company Group shall be entitled to set off the repayment amount against any amount owed to the person by the Company Group, to require the forfeiture of any award granted by the Company Group to the person, or to take any and all necessary actions to recoup the repayment amount from the person, in each case, to the fullest extent permitted under applicable law, including without limitation, Section 409A of the Internal Revenue Code and the regulations and guidance thereunder. If the Committee does not specify a repayment timing in the written notice described above, the applicable person shall be required to repay the Incentive Compensation to the Company Group by wire, cash or cashier's check no later than thirty days after receipt of such notice.

5. No Indemnification

No Covered Person shall be indemnified or reimbursed by the Company Group in respect of any loss of compensation by such person in accordance with this Recoupment Policy.

6. Miscellaneous

This Recoupment Policy will be administered and interpreted by the Committee, provided that the Board may, from time to time, exercise discretion to administer and interpret this Recoupment Policy, in which case, all references herein to "Committee" shall be deemed to refer to the Board. Any determination by the Committee with respect to this Recoupment Policy shall be final, conclusive and binding on all interested parties. The determinations of the Committee under this Recoupment Policy need not be uniform with respect to all persons, and may be made selectively amongst persons, whether or not such persons are similarly situated. Each Covered Person shall be required to execute the acknowledgement in Exhibit B of this Policy as soon as practicable, but no later than thirty (30) days, after the later of (i) the Effective Date and (ii) the date on which the employee is designated as a Covered Person; provided, however, that failure to execute such acknowledgement shall have no impact on the enforceability of this Policy.

The provisions in this Recoupment Policy are intended to be applied to the fullest extent of the law. To the extent that any provision of this Recoupment Policy is found to be unenforceable or invalid under any applicable law, such provision will be applied to the maximum extent permitted and shall automatically be deemed amended in a manner consistent with its objectives to the extent necessary to conform to applicable law. The invalidity or unenforceability of any provision of this Recoupment Policy shall not affect the validity or enforceability of any other provision of this Recoupment Policy.

The rights of the Company Group under this Recoupment Policy to seek forfeiture or reimbursement are in addition to, and not in lieu of, any rights of recoupment, or remedies or rights other than recoupment, that may be available to the Company Group pursuant to the terms of any law, government regulation or stock exchange listing requirement, the Supplemental Policy or any other policy, code of conduct, employee handbook, employment agreement, equity award agreement, or other plan or agreement of the Company Group.

7. Delegation

With respect to any Covered Person who is not an Executive Officer, the President and Chief Executive Officer, the General Counsel, the Chief Financial Officer and the Chief Human Resources Officer of the Company (the "Authorized Officers") may each administer this Recoupment Policy to the extent permitted under the applicable incentive plans of the Company Group and applicable law, and may delegate this administrative authority to senior members of the human resource department of the Company. Notwithstanding the foregoing, the Committee may, in its sole discretion from time-to-time, modify or terminate the delegated authority of the Authorized Officers and their delegates to administer this Recoupment Policy.

8. Amendment and Termination

To the extent permitted by, and in a manner consistent with applicable law, the Committee may terminate, suspend or amend this Recoupment Policy at any time in its discretion.

9. Successors

This Recoupment Policy shall be binding and enforceable against all persons and their respective beneficiaries, heirs, executors, administrators or other legal representatives with respect to any Incentive Compensation received or administered by such persons or entities.

EXHIBIT A

AIR PRODUCTS AND CHEMICALS, INC.
SUPPLEMENTAL EXECUTIVE OFFICER RECOUPMENT POLICY

The Management Development and Compensation Committee of the Board (the "Committee") of the Board of Directors (the "Board") of Air Products and Chemicals, Inc. (the "Company") believes that it is appropriate for the Company to adopt this Supplemental Executive Officer Recoupment Policy (the "Policy") to be applied to the Executive Officers of the Company and adopts this Policy to be effective as of the Effective Date.

1. Definitions

For purposes of this Policy, the following definitions shall apply:

(a) "Company Group" means the Company and each of its Subsidiaries, as applicable.

(b) "Covered Compensation" means any Incentive-Based Compensation granted, vested or paid to a person who served as an Executive Officer at any time during the performance period for the Incentive-Based Compensation and that was Received (i) on or after the Effective Date, (ii) after the person became an Executive Officer and (iii) at a time that the Company had a class of securities listed on a national securities exchange or a national securities association.

(c) "Effective Date" means October 1, 2023.

(d) "Erroneously Awarded Compensation" means the amount of Covered Compensation granted, vested or paid to a person during the fiscal period when the applicable Financial Reporting Measure relating to such Covered Compensation was attained that exceeds the amount of Covered Compensation that otherwise would have been granted, vested or paid to the person had such amount been determined based on the applicable Restatement, computed without regard to any taxes paid (i.e., on a pre-tax basis). For Covered Compensation based on stock price or total shareholder return, where the amount of Erroneously Awarded Compensation is not subject to mathematical recalculation directly from the information in a Restatement, the Committee will determine the amount of such Covered Compensation that constitutes Erroneously Awarded Compensation, if any, based on a reasonable estimate of the effect of the Restatement on the stock price or total shareholder return upon which the Covered Compensation was granted, vested or paid and the Committee shall maintain documentation of such determination and provide such documentation to the NYSE.

(e) "Exchange Act" means the Securities Exchange Act of 1934.

(f) "Executive Officer" means each "officer" of the Company as defined under Rule 16a-1(f) under Section 16 of the Exchange Act, which shall be deemed to include any individuals identified by the Company as executive officers pursuant to Item 401(b) of Regulation S-K under the Exchange Act. Both current and former Executive Officers are subject to the Policy in accordance with its terms.

(g) "Financial Reporting Measure" means (i) any measure that is determined and presented in accordance with the accounting principles used in preparing the Company's financial statements, and any measures derived wholly or in part from such measures and may consist of GAAP or non-GAAP financial measures (as defined under SEC Regulation G and under Item 10 of SEC Regulation S-K), (ii) stock price or (iii) total shareholder return. Financial Reporting Measures may or may not be filed with the SEC and may be presented outside the Company's financial statements, such as in Managements' Discussion and Analysis of Financial Conditions and Result of Operations or in the performance graph required under Item 201(e) of SEC Regulation S-K.

(h) "Incentive-Based Compensation" means any compensation that is granted, earned or vested based wholly or in part upon the attainment of a Financial Reporting Measure.

(i) "Lookback Period" means the three completed fiscal years (plus any transition period of less than nine months that is within or immediately following the three completed fiscal years and that results from a change in the Company's fiscal year) immediately preceding the date on which the Company is required to prepare a Restatement for a given reporting period, with such date being the earlier of: (i) the date the Board, a committee of the Board, or the officer or officers of the Company authorized to take such action if Board action is not required, concludes, or reasonably should have concluded, that the Company is required to prepare a Restatement, or (ii) the date a court, regulator or other legally authorized body directs the Company to prepare a Restatement.

Recovery of any Erroneously Awarded Compensation under the Policy is not dependent on if or when the Restatement is actually filed.

(j) "NYSE" means the New York Stock Exchange.

(k) "Received": Incentive-Based Compensation is deemed "Received" in the Company's fiscal period during which the Financial Reporting Measure specified in or otherwise relating to the Incentive-Based Compensation award is attained, even if the grant, vesting or payment of the Incentive-Based Compensation occurs after the end of that period.

(l) "Restatement" means a required accounting restatement of any Company financial statement due to the material noncompliance of the Company with any financial reporting requirement under the securities laws, including (i) to correct an error in previously issued financial statements that is material to the previously issued financial statements (commonly referred to as a "Big R" restatement) or (ii) to correct an error in previously issued financial statements that is not material to the previously issued financial statements but that would result in a material misstatement if the error were corrected in the current period or left uncorrected

in the current period (commonly referred to as a "little r" restatement). Changes to financial statements that do not constitute a Restatement under current accounting standards include retroactive: (i) application of a change from one generally accepted accounting principle to another generally accepted accounting principle; (ii) revisions to reportable segment information due to a change in internal organization; (iii) reclassification due to a discontinued operation; (iv) application of a change in reporting entity, such as from a reorganization of entities under common control; and (v) revisions for stock splits, reverse stock splits, stock dividends, or other changes in capital structure.

(m) "SEC" means the United States Securities and Exchange Commission.

(n) "Subsidiary" means any domestic or foreign corporation, partnership, association, joint stock company, joint venture, trust or unincorporated organization "affiliated" with the Company, that is, directly or indirectly, through one or more intermediaries, "controlling", "controlled by" or "under common control with", the Company. "Control" for this purpose means the possession, direct or indirect, of the power to direct or cause the direction of the management and policies of such person, whether through the ownership of voting securities, contract or otherwise.

2. Recoupment of Erroneously Awarded Compensation

In the event of a Restatement, any Erroneously Awarded Compensation Received during the Lookback Period prior to the Restatement (a) that is then-outstanding but has not yet been paid shall be automatically and immediately forfeited and (b) that has been paid to any person shall be subject to reasonably prompt repayment to the Company Group in accordance with Section 3 of this Policy. The Committee must pursue (and shall not have the discretion to waive) the forfeiture and/or repayment of such Erroneously Awarded Compensation in accordance with Section 3 of this Policy, except as provided below.

Notwithstanding the foregoing, the Committee may determine not to pursue the forfeiture and/or recovery of Erroneously Awarded Compensation from any person if the Committee determines that such forfeiture and/or recovery would be impracticable due to any of the following circumstances: (i) the direct expense paid to a third party (for example, reasonable legal expenses and consulting fees) to assist in enforcing the Policy would exceed the amount to be recovered (following a reasonable attempt by the Company Group to recover such Erroneously Awarded Compensation, the documentation of such attempt(s), and the provision of such documentation to the NYSE), or (ii) recovery would likely cause any otherwise tax-qualified retirement plan, under which benefits are broadly available to employees of Company Group, to fail to meet the requirements of 26 U.S.C. 401(a)(13) or 26 U.S.C. 411(a) and regulations thereunder.

3. Means of Repayment

In the event that the Committee determines that any person shall repay any Erroneously Awarded Compensation, the Committee shall provide written notice to such person by email or certified mail to the physical address on file with the Company Group for such person, and the person shall satisfy such repayment in a manner and on such terms as required by the Committee, and the Company Group shall be entitled to set off the repayment amount against any amount owed to the person by the Company Group, to require the forfeiture of any award granted by the Company Group to the person, or to take any and all necessary actions to reasonably promptly recoup the repayment amount from the person, in each case, to the fullest extent permitted under applicable law, including without limitation, Section 409A of the Internal Revenue Code and the regulations and guidance thereunder. If the Committee does not specify a repayment timing in the written notice described above, the applicable person shall be required to repay the Erroneously Awarded Compensation to the Company Group by wire, cash or cashier's check no later than thirty (30) days after receipt of such notice.

4. No Indemnification

No person shall be indemnified, insured or reimbursed by the Company Group in respect of any loss of compensation by such person in accordance with this Policy, nor shall any person receive any advancement of expenses for disputes related to any loss of compensation by such person in accordance with this Policy, and no person shall be paid or reimbursed by the Company Group for any premiums paid by such person for any third-party insurance policy covering potential recovery obligations under this Policy. For this purpose, “indemnification” includes any modification to current compensation arrangements or other means that would amount to *de facto* indemnification (for example, providing the person a new cash award which would be cancelled to effect the recovery of any Erroneously Awarded Compensation). In no event shall the Company Group be required to award any person an additional payment if any Restatement would result in a higher incentive compensation payment.

5. Miscellaneous

This Policy generally will be administered and interpreted by the Committee, provided that the Board may, from time to time, exercise discretion to administer and interpret this Policy, in which case, all references herein to “Committee” shall be deemed to refer to the Board. Any determination by the Committee with respect to this Policy shall be final, conclusive and binding on all interested parties. Any discretionary determinations of the Committee under this Policy, if any, need not be uniform with respect to all persons, and may be made selectively amongst persons, whether or not such persons are similarly situated. Each Executive Officer shall be required to execute the acknowledgement in Exhibit B of this Policy as soon as practicable, but no later than thirty (30) days, after the date on which the employee is designated as an Executive Officer; provided, however, that failure to execute such acknowledgement shall have no impact on the enforceability of this Policy.

This Policy is intended to satisfy the requirements of Section 954 of the Dodd-Frank Wall Street Reform and Consumer Protection Act, as it may be amended from time to time, and any related rules or regulations promulgated by the SEC or the NYSE, including any additional or new requirements that become effective after the Effective Date which upon effectiveness shall be deemed to automatically amend this Policy to the extent necessary to comply with such additional or new requirements.

The provisions in this Policy are intended to be applied to the fullest extent of the law. To the extent that any provision of this Policy is found to be unenforceable or invalid under any applicable law, such provision will be applied to the maximum extent permitted and shall automatically be deemed amended in a manner consistent with its objectives to the extent necessary to conform to applicable law. The invalidity or unenforceability of any provision of this Policy shall not affect the validity or enforceability of any other provision of this Policy. Recoupment of Erroneously Awarded Compensation under this Policy is not dependent upon the Company Group satisfying any conditions in this Policy, including any requirements to provide applicable documentation to the NYSE.

The rights of the Company Group under this Policy to seek forfeiture or reimbursement are in addition to, and not in lieu of, any rights of recoupment, or remedies or rights other than recoupment, that may be available to the Company Group pursuant to the terms of any law, government regulation or stock exchange listing requirement, the Company’s Compensation Recoupment Policy or any other policy, code of conduct, employee handbook, employment agreement, equity award agreement, or other plan or agreement of the Company Group.

6. Amendment and Termination

To the extent permitted by, and in a manner consistent with applicable law, including SEC and NYSE rules, the Committee may terminate, suspend or amend this Policy at any time in its discretion.

7. Successors

This Policy shall be binding and enforceable against all persons and their respective beneficiaries, heirs, executors, administrators or other legal representatives with respect to any Covered Compensation granted, vested or paid to or administered by such persons or entities.

EXHIBIT B

AIR PRODUCTS AND CHEMICALS, INC.
COMPENSATION RECOUPMENT POLICY
SUPPLEMENTAL EXECUTIVE OFFICER RECOUPMENT
POLICY ACKNOWLEDGMENT, CONSENT AND AGREEMENT

I acknowledge that I have received and reviewed a copy of the Air Products and Chemicals, Inc. Compensation Recoupment Policy and, if applicable, the Supplemental Executive Officer Recoupment Policy (as may be applicable, and as each may be amended from time to time, the “Policies”) and I have been given an opportunity to ask questions about the Policies and review them with my counsel. I knowingly, voluntarily and irrevocably consent to an agree to be bound by and subject to the terms and conditions of the Policies, including that I will return any Incentive Compensation and Erroneously Awarded Compensation, as applicable, that is required to be repaid in accordance with the Policies. I further acknowledge, understand and agree that (i) the compensation that I receive, have received or may become entitled to receive from the Company Group is subject to the Policies, and the Policies may affect such compensation and (ii) I have no right to indemnification, insurance payments or other reimbursement by or from the Company Group for any compensation that is subject to recoupment and/or forfeiture under the Policies. Capitalized terms not defined herein have the meanings set forth in the Policies.

Signed: ____

Print Name: ____

Date: ____