2020
Annual Report

Nordson

Dear Nordson shareholders,

In this unprecedented year, Nordson did not simply weather the storm. We advanced our long-term profitable growth strategy. We adapted to a dynamic COVID-19 environment and worked together to keep our employees safe. Simultaneously, our employees demonstrated the customer passion that has been a hallmark of Nordson's success – always responding and serving an essential role in the success of our customers.

Leveraging our strengths and values

Nordson's geographic and end market diversity is one of our greatest strengths. Nearly 65 percent of our business is outside of the United States. We serve a variety of end markets, including consumer non-durables, medical, electronics, industrial and more. More than 50 percent of our business mix is recurring revenue. Historically, these attributes have made Nordson recession resilient, and that remained true in fiscal 2020. Our diversity and commitment to our customers resulted in a strong performance in a unique macroeconomic environment.

Our direct sales force is another competitive advantage. Our focus on responding to customers' needs in this dynamic environment was a perfect example of our customer passion. Our adhesives team customized hot melt adhesive applicators to enable non-woven customers to convert manufacturing lines and produce personal protective equipment. Further, this customized precision adhesive dispensing technology increased one customer's mask manufacturing capacity to as many as ten times more masks per minute. Specific to battling the pandemic, Nordson teams partnered with key medical customers to develop applications that dispense reagents for diagnostic test strips, and to produce proprietary single-use plastic fluid management components to manufacture ventilators and vaccines.

In these challenging times, we stayed true to our values by investing in the communities where we live and work. The Nordson Corporation Foundation donated $1 million toward the global COVID-19 response. A donation of $500,000 was distributed among U.S.-based nonprofits chosen by our employees. In support of our international colleagues, $500,000 was donated to the COVID-19 Solidarity Response Fund, which is co-founded by the United Nations and the World Health Organization.

Advancing our profitable growth strategy

Our long-term profitable growth strategy will make a strong Nordson even stronger. At the heart of this strategy is the next generation of the Nordson Business System, the NBS Next growth framework. In 2020 we defined and built NBS Next and then deployed it in four pilot businesses. I am encouraged to see our teams beginning to use data generated by product and customer segmentation to select and invest in their best growth opportunities. It is exciting to watch the curiosity and experimentation in our businesses, as teams apply data-centered insights to set their long-term profitable growth goals. By year-end, we were applying this strategic discipline more broadly across all our businesses.

Practicing NBS Next with high quality and rigor has led us to take actions that will strengthen our differentiated product portfolio for sustainable long-term growth:

- We acquired Fluortek, a precision plastic extrusion manufacturer in the medical device industry. Within our Nordson MEDICAL product line, Fluortek brings highly differentiated PTFE medical tubing expertise, which is complementary to our current value-added component offering for minimally invasive therapies such as heart valve replacement.

- In test and inspection, we acquired leading-edge X-ray technology with the vivaMOS acquisition. vivaMOS designs, develops and fabricates high-end image sensors that will further differentiate our X-ray inspection portfolio.

- We also announced the divestiture of our screws and barrels product line. Using NBS Next, we recognized that this product line, while a good business, did not meet the profitability profile of the other product lines within our polymer processing business. This divestiture allows our team to focus its resources and time on growing its more differentiated product lines.

Also this year, we realigned our segments into Advanced Technology Solutions (ATS) and Industrial Precision Solutions (IPS) with the goal of unleashing an owner mindset. The transition to a division-led, entrepreneurial company will empower our teams to make decisions as close to the customer as possible. In this operating environment, our divisional leaders will use critical insights created by NBS Next segmentation tools to prioritize growth investments and simplify nonvalue-added tasks in operations to deliver best-in-class product quality and delivery.

I am pleased by how our team has laid the foundation to lead Nordson into the next decade of profitable growth. Earlier this year, we announced the promotions of Jeff Pembroke and Greg Merk as ATS and IPS segment leaders, respectively. Throughout their long tenure at Nordson, Jeff and Greg have consistently demonstrated customer passion and delivered profitable growth results. They are committed to building new capabilities needed to secure the long-term future of Nordson. We also welcomed Joe Kelley as our new chief financial officer. Joe brings more than 25 years of financial and operational expertise to Nordson, most recently serving as chief financial officer of Materion Corp., a global advanced materials company.

Looking forward

As we move into fiscal 2021, we are well positioned. We know how to operate safely in this dynamic environment. We have a strong balance sheet with sufficient liquidity that allows us to stay focused on a balanced capital allocation strategy that will drive profitable organic and acquisition-led growth, and to stay committed to returning value to our shareholders. Our leadership team is coming together well, and I look forward to further developing a deep and diverse bench of talent that will help us accelerate NBS Next and act on our best profitable growth opportunities. As the macroeconomic environment recovers, we will deliver on our growth potential with our differentiated precision technologies and our strong direct salesforce.

Again, thank you to our shareholders, customers and employees for your continued support. We will continue to make a strong Nordson even stronger.

Sincerely,

Sundaram Nagarajan
President and Chief Executive Officer

Board Transitions

Our board of directors brings a broad set of strategic perspectives and deep governance experience to enable the growth of Nordson and represent the views of our shareholders. We recently welcomed two new directors to this strong board: Dr. John DeFord, executive vice president and chief technology officer of Becton, Dickinson and Company (NYSE: BDX), and Jennifer (Jenny) Parmentier, vice president and president – Motion Systems Group for Parker Hannifin Corporation (NYSE: PH).

John and Jenny will bring valuable new perspectives to the board. John's technical and regulatory experience in the medical device end market will enrich the board's viewpoint as Nordson continues to grow in this attractive market. Jenny brings strong operational, industrial and M&A experience to the board, which will be important as we continue to deploy our NBS Next growth framework.

As we welcome John and Jenny, I must also express my deepest personal thanks to Lee Banks, Randy Carson and Joe Keithley who recently departed the board. Together, Lee, Randy and Joe served more than 40 years on the board. These long-standing board members played important roles in guiding the growth of this great company.

We are thankful for the support of this diverse and thoughtful independent board to advise us through our next chapter of profitable growth.

UNITED STATES SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-K

(Mark One)

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

For the fiscal year ended October 31, 2020

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 0-7977

NORDSON CORPORATION

(Exact name of Registrant as specified in its charter)

Ohio	**34-0590250**
(State of incorporation)	**(I.R.S. Employer Identification No.)**
28601 Clemens Road Westlake, Ohio	**44145**
(Address of principal executive offices)	**(Zip Code)**

(440) 892-1580

(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 Shares, without par value	**NDSN**	**Nasdaq Stock Market LLC**

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, and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

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

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

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

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

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

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

The aggregate market value of Common Shares, no par value per share, held by nonaffiliates (based on the closing sale price on the Nasdaq Stock Market) as of April 30, 2020 was approximately $8,999,983,246.

There were 58,094,487 Common Shares outstanding as of November 30, 2020.

Documents incorporated by reference:

Portions of the Proxy Statement for the 2021 Annual Meeting - Part III of the Form 10-K

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PART I

NOTE REGARDING AMOUNTS AND FISCAL YEAR REFERENCES

In this annual report, all amounts related to United States dollars and foreign currency and to the number of Nordson Corporation's common shares, except for per share earnings and dividend amounts, are expressed in thousands. Unless the context otherwise indicates, all references to "we," "us," "our," or the "Company" mean Nordson Corporation.

Unless otherwise noted, all references to years relate to our fiscal year ending October 31.

Item 1. Business

General Description of Business

Nordson engineers, manufactures and markets differentiated products and systems used for precision dispensing, applying and controlling of adhesives, coatings, polymers, sealants, biomaterials, and other fluids, to test and inspect for quality, and to treat and cure surfaces. These products are supported with extensive application expertise and direct global sales and service. We serve a wide variety of consumer non-durable, consumer durable and technology end markets including packaging, nonwovens, electronics, medical, appliances, energy, transportation, building and construction, and general product assembly and finishing.

Our strategy for long-term growth is based on solving customers' needs globally. We were incorporated in the State of Ohio in 1954 and are headquartered in Westlake, Ohio. Our products are marketed through a network of direct operations in more than 35 countries. Consistent with this global strategy, approximately 64 percent of our revenues were generated outside the United States in 2020.

We have 7,555 employees worldwide. Principal manufacturing facilities are located in the United States, the People's Republic of China, Germany, Ireland, Israel, Mexico, the Netherlands, Thailand, and the United Kingdom.

COVID-19 Pandemic Update

In December 2019, a novel strain of coronavirus ("COVID-19") emerged and has since spread to other countries, including the United States. In March 2020, the World Health Organization declared COVID-19 as a pandemic (the "COVID-19 pandemic"). The COVID-19 pandemic has resulted in governments around the world implementing stringent measures to help control the spread of the virus, including quarantines, "shelter in place" and "stay at home" orders, travel restrictions, business interruptions and other measures.

Throughout the COVID-19 pandemic, we have supported, and continue to support, multiple "critical infrastructure" sectors by manufacturing materials and products needed for medical supply chains, packaging, transportation, energy, communications, and other critical infrastructure industries. We have benefited from our geographical and product diversification as the end markets we serve have remained resilient in response to the COVID-19 pandemic, and we continue to invest in the businesses, people, and strategies necessary to achieve our long-term priorities as we focus on driving profitable growth. We have continued to operate during the COVID-19 pandemic in all our production facilities, having taken the recommended public health measures to ensure worker and workplace safety. As a result, there have been unfavorable impacts on our manufacturing efficiencies. Additionally, we are taking steps to offset cost increases from COVID-19 pandemic-related supply chain disruptions. For more information on how we have modified our business practices during the COVID-19 pandemic, see "Human Capital Resources" below.

We continue to actively monitor the rapidly evolving circumstances and impact of the COVID-19 pandemic, which has negatively disrupted, and may continue to negatively disrupt, our business and results of operations in the future. The full extent of the COVID-19 pandemic on our operations and the markets we serve remains highly uncertain and will depend largely on future developments related to the COVID-19 pandemic, including infection rates increasing or returning in various geographic areas, the ultimate duration of the COVID-19 pandemic, actions by government authorities to contain the outbreak or treat its impact, such as reimposing previously lifted measures or putting in place additional restrictions, and the widespread distribution and acceptance of an effective vaccine, among other things. These developments are constantly evolving and cannot be accurately predicted. See Part I, Item 1A, "Risk Factors" in this report.

Segment Update

As described in Note 16, effective in the second quarter of 2020, we made changes to realign our management team and our operating segments. This realignment will enable us to better serve global customers and markets, to more efficiently leverage technology synergies, to operate divisions of significant size in a consistent and focused way and to position ourselves for our next chapter of profitable growth. The revised segments better reflect how we manage the Company, allocate resources, and assess performance of the businesses.

We realigned our former three operating segments into two: Industrial Precision Solutions (IPS) and Advanced Technology Solutions (ATS). Existing product lines were unchanged as part of this new structure.

New Chief Financial Officer

On May 8, 2020, we announced that Joseph P. Kelley had been named Executive Vice President and Chief Financial Officer of the Company, effective July 6, 2020. Mr. Kelley succeeded Gregory A. Thaxton, who previously announced his plans to retire. Upon Mr. Kelley's start date, Mr. Thaxton became Executive Vice President to the Company until he retired on August 28, 2020.

Corporate Purpose and Goals

We strive to be a vital, self-renewing, worldwide organization that, within the framework of ethical behavior and enlightened citizenship, grows and produces wealth for our customers, employees, shareholders, and communities.

We operate for the purpose of creating balanced, long-term benefits for all of our constituencies.

We focus on long-term growth and returns. Each quarter we may not produce increased sales, net income, or earnings per share, or exceed the comparative prior year's quarter. When short-term swings occur, we do not intend to alter our foundational objectives in efforts to mitigate the impact of these temporary occurrences.

In 2020, we launched the next generation of the Nordson Business System – the NBS Next growth framework – to prioritize investments that will drive profitable growth and identify opportunities to simplify our cost structure. Fundamental to this strategy is to select and invest in the best profitable growth opportunities. This data-driven customer and product segmentation approach identifies where we create the greatest value for our customers. Using data in a consistent and disciplined way, leaders across the Company work to define their strategic business priorities.

We drive organic growth by continually introducing new products and technology, providing high levels of customer service and support, capturing rapidly expanding opportunities in emerging geographies, and by leveraging existing technology into new applications. Additional growth comes through the acquisition of companies that serve international growth markets, share our business model characteristics and can leverage our global infrastructure. The primary goals of our acquisition strategy are to complement our current capabilities, diversify our business into new industry sectors and with new customers and expand the scope of the solutions we can offer to our customers.

We strive to provide genuine customer satisfaction – it is the foundation upon which we continue to build our business.

Complementing our business strategy is the objective to provide opportunities for employee self-fulfillment, growth, security, recognition and equitable compensation. This goal is met through the Human Resources department's facilitation of employee training, leadership training and the creation of on-the-job growth opportunities. The result is a highly qualified and professional global team capable of meeting corporate objectives. For more information, see "Human Capital Resources" below.

We recognize the value of employee participation in the planning process. Strategic and operating plans are developed by all business units, resulting in a sense of ownership and commitment on the part of employees in accomplishing our objectives.

We are an equal opportunity employer.

We are committed to contributing approximately five percent of domestic pretax earnings to human welfare services, education and other charitable activities, particularly in communities where we have significant operations.

Principal Products and Uses

We engineer, manufacture and market differentiated products and systems used to dispense, apply and control adhesives, coatings, polymers, sealants, biomaterials, medical components, and other fluids, to test and inspect for quality, and to treat and cure surfaces. Our technology-based systems can be found in manufacturing facilities around the world producing a wide range of goods for consumer durable, consumer non-durable and technology end markets. Equipment ranges from single-use components to manual, stand-alone units for low-volume operations to microprocessor-based automated systems for high-speed, high-volume production lines.

We market our products globally, primarily through a direct sales force, and also through qualified distributors and sales representatives. We have built a worldwide reputation for creativity and expertise in the design and engineering of high-technology application equipment that meets the specific needs of our customers. We create value for our customers by developing solutions that increase uptime, enable faster line speeds and reduce consumption of materials. We serve a broad customer base, both in terms of industries and geographic regions. In 2020, no single customer accounted for ten percent or more of sales.

The following is a summary of the product lines and markets served by our operating segments:

Industrial Precision Solutions

This segment combines our legacy Adhesive Dispensing Systems (ADS) and Industrial Coating Systems (ICS) businesses. Industrial Precision Solutions enhances the technology synergies between ADS and ICS to deliver proprietary dispensing and processing technology to diverse end markets. Product lines reduce material consumption, increase line efficiency and enhance product brand and appearance. Components are used for dispensing adhesives, coatings, paint, finishes, sealants and other materials. This segment primarily serves the industrial, consumer durables and non-durables markets.

- ***Nonwovens*** – Dispensing, coating and laminating systems for applying adhesives, lotions, liquids and fibers to disposable products and continuous roll goods. Key strategic markets include adult incontinence products, baby diapers and child-training pants, feminine hygiene products and surgical drapes, gowns, shoe covers and face masks.
- ***Packaging*** – Automated adhesive dispensing systems used in the rigid packaged goods industries. Key strategic markets include food and beverage packaging, pharmaceutical packaging, and other consumer goods packaging.
- ***Polymer Processing*** – Components and systems used in the thermoplastic melt stream in plastic extrusion, injection molding, compounding, polymerization and recycling processes. Key strategic markets include flexible packaging, electronics, medical, building and construction, transportation and aerospace, and general consumer goods.
- ***Product Assembly*** – Dispensing, coating and laminating systems for the assembly of plastic, metal and wood products, for paper and paperboard converting applications and for the manufacturing of continuous roll goods. Key strategic markets include appliances, automotive components, building and construction materials, electronics, furniture, solar energy, and the manufacturing of bags, sacks, books, envelopes and folding cartons.
- ***Cold Materials*** – Automated and manual dispensing products and systems used to apply multiple component adhesive and sealant materials in the general industrial and transportation manufacturing industries. Key strategic markets include aerospace, electric battery, appliances, automotive, building and construction, composites, electronics and medical.
- ***Container Coating*** – Automated and manual dispensing and curing systems used to coat and cure containers. Key strategic markets include beverage containers and food cans.
- ***Curing and Drying Systems*** – Ultraviolet equipment used primarily in curing and drying operations for specialty coatings, semiconductor materials and paints. Key strategic markets include electronics, containers and durable goods products.
- ***Liquid Finishing*** – Automated and manual dispensing systems used to apply liquid paints and coatings to consumer and industrial products. Key strategic markets include automotive components, agriculture, construction, metal shelving and drums.
- ***Powder Coating*** – Automated and manual dispensing systems used to apply powder paints and coatings to a variety of metal, plastic and wood products. Key strategic markets include agriculture and construction equipment, appliances, automotive components, home and office furniture, lawn and garden equipment, pipe coating, and wood and metal shelving.

Advanced Technology Solutions

This segment integrates our proprietary product technologies found in progressive stages of a customer's production processes, such as surface treatment, precisely controlled dispensing of material and post-dispense test and inspection to ensure quality. Related single-use plastic molded syringes, cartridges, tips, fluid connection components, tubing, balloons and catheters are used to dispense or control fluids in production processes or within customers' end products. This segment predominantly serves customers in the electronics, medical and related high-tech industrial markets.

- ***Electronics Systems*** – Automated dispensing systems for high-speed, accurate application of a broad range of attachment, protection and coating fluids, and related gas plasma treatment systems for cleaning and conditioning surfaces prior to dispense. Key strategic markets include the breadth of the electronics industry manufacturing supply chain that produces semiconductor, printed circuit board assemblies and electronic components.
- ***Fluid Management*** – Precision manual and semi-automated dispensers, minimally invasive interventional delivery devices, and highly engineered single-use plastic molded syringes, cartridges, tips, fluid connection components, tubing, balloons, and catheters. Products are used for applying and controlling the flow of adhesives,

sealants, lubricants, and biomaterials in critical industrial production processes and within medical equipment and related surgical procedures. Key strategic markets include consumer goods, electronics, industrial assembly, and medical.

- ***Test and Inspection*** – Bond testing and automated optical, acoustic microscopy and x-ray inspection systems used in the semiconductor and printed circuit board industries. Key strategic markets include mobile phones, tablets, personal computers, wearable technology, liquid crystal displays, micro hard drives, microprocessors, printed circuit boards, flexible circuits, MEMS and semiconductor packaging.

Manufacturing, Raw Materials and Other Resources

Our production operations include machining, molding and assembly. We manufacture specially designed parts and assemble components into finished equipment. Many components are made in standard modules that can be used in more than one product or in combination with other components for a variety of models. We have principal manufacturing operations and sources of supply in the United States in Ohio, Georgia, California, Colorado, Connecticut, Illinois, Massachusetts, Michigan, Minnesota, New Jersey, Rhode Island, Tennessee and Wisconsin; as well as in the People's Republic of China, Germany, Ireland, Israel, Mexico, the Netherlands, Thailand and the United Kingdom.

Principal materials used to make our products are metals and plastics, typically in sheets, bar stock, castings, forgings, tubing and pellets. We also purchase many electrical and electronic components, fabricated metal parts, high-pressure fluid hoses, packings, seals and other items integral to our products. Suppliers are competitively selected based on cost, quality and service. All significant raw materials that we use are available through multiple sources. We purchase most raw materials and other components on the open market and rely on third parties to provide certain finished goods. While these items are generally available from multiple sources, the cost of products sold may be affected by changes in the market price of raw materials and tariffs on certain raw materials, particularly imports from China, as well as disruptions in availability of raw materials, components and sourced finished goods.

We monitor and investigate alternative suppliers and materials based on numerous attributes including quality, service and price. We currently source raw materials and components from a number of suppliers, but our ongoing efforts to improve the cost effectiveness of our products and services may result in a reduction in the number of our suppliers.

Senior operating management supervises an extensive quality control program for our equipment, machinery and systems, and manufacturing processes.

Natural gas and other fuels are our primary energy sources. However, standby capacity for alternative sources is available if needed.

The COVID-19 pandemic has disrupted the global supply chain to a certain extent. We have not experienced significant supply disruption from third-party component suppliers as a result of the COVID-19 pandemic. However, we have faced and continue to face some supply chain constraints primarily related to logistics, including higher freight rates. In addition, shipments between countries have been more impacted by the COVID-19 pandemic and we have experienced delays due to a variety of factors.

Intellectual Property

We maintain procedures to protect our intellectual property (including patents, trademarks and copyrights) both domestically and internationally. Risk factors associated with our intellectual property are discussed in Part I, Item 1A, "Risk Factors."

Our intellectual property portfolios include valuable patents, trade secrets, know-how, domain names, trademarks and trade names. As of October 31, 2020, we held 564 United States patents and 1,362 foreign patents and had 142 United States patent applications pending and 787 foreign patent applications pending, but there is no assurance that any patent application will be issued. We continue to apply for and obtain patent protection for new products on an ongoing basis.

Patents covering individual products extend for varying periods according to the date of filing or grant and the legal term of patents in various countries where a patent is obtained. Our patent portfolio as of October 31, 2020 had expiration dates ranging from November 2020 to August 2039. The actual protection a patent provides, which can vary from country to country, depends upon the type of patent, the scope of its coverage and the availability of legal remedies in each country. We believe, however, that the duration of our patents generally exceeds the life cycles of the technologies disclosed and claimed in the patents.

We believe our trademarks are important assets and we aggressively manage our brands. We also own a number of trademarks in the United States and foreign countries, including registered trademarks for Nordson, Asymtek, Avalon, Dage, EFD, March, Sonoscan, Value Plastics, Vention, Xaloy and YESTech and various common law trademarks which are important to our business, inasmuch as they identify Nordson and our products to our customers. As of October 31, 2020, we had a total of 1,056 trademark registrations in the United States and in various foreign countries.

We rely upon a combination of nondisclosure and other contractual arrangements and trade secret laws to protect our proprietary rights and also enter into confidentiality and intellectual property agreements with our employees that require them to disclose any inventions created during employment, convey all rights to inventions to us, and restrict the distribution of proprietary information.

We protect and promote our intellectual property portfolio and take those actions we deem appropriate to enforce our intellectual property rights and to defend our right to sell our products. Although in the aggregate our intellectual property is important to our operations, we do not believe that the loss of any one patent or trademark, or group of related patents or trademarks would have a material adverse effect on our results of operations or financial position of our overall business.

Seasonal Variation in Business

Generally, the highest volume of sales occurs in the second half of the year due in large part to the timing of customers' capital spending programs. Accordingly, first quarter sales volume is typically the lowest of the year due to timing of customers' capital spending programs and customer holiday shutdowns.

Working Capital Practices

No special or unusual practices affect our working capital. We generally require advance payments as deposits on customized equipment and systems and, in certain cases, require progress payments during the manufacturing of these products. We continue to initiate new processes focused on reduction of manufacturing lead times, resulting in lower investment in inventory while maintaining the capability to respond promptly to customer needs.

Competitive Conditions

We operate in a competitive global marketplace and compete with many large, well established and highly competitive manufacturers and service providers. Our business is affected by a range of macroeconomic conditions, including industry capacity changes, global competition and economic conditions in the U.S. and abroad, as well as fluctuations in currency exchange rates. Our equipment is sold in competition with a wide variety of alternative bonding, sealing, finishing, coating, processing, testing, inspecting and fluid control techniques. Potential uses for our equipment include any production processes that require preparation, modification or curing of surfaces; dispensing, application, processing or control of fluids and materials; or testing and inspecting for quality.

Many factors influence our competitive position, including pricing, product quality and service. We maintain a leadership position in our business segments by delivering high-quality, innovative products and technologies, as well as service and technical support. Working with customers to understand their processes and developing the application solutions that help them meet their production requirements also contributes to our leadership position. Our worldwide network of direct sales and technical resources also is a competitive advantage. The impact of tariffs over our end markets in Asia could negatively affect our long-term market position in that region.

Compliance with Governmental Regulations

As a U.S. public company that supports manufacturing, designing and servicing highly complex products in regulatory environments, our global operations are subject to a variety of laws, regulations and compliance obligations. We have robust internal controls, quality management systems, and management systems of compliance that govern our internal actions and mitigate our risk of non-compliance. We also have safeguards established to identify non-compliance concerns through internal and external audits and risk assessments, as well as an ethics helpline reporting system.

We are also required to comply with increasingly complex and changing laws and regulations enacted to protect business and personal data in the United States and other jurisdictions regarding privacy, data protection and data security, including those related to the collection, storage, use, transmission and protection of personal information and other consumer, customer, vendor or employee data. Such privacy and data protection laws and regulations, including with respect to the European Union's General Data Protection Regulation (GDPR), the Brazilian General Data Protection Law, and the California Consumer Privacy Act of 2018 (CCPA), and the interpretation and enforcement of such laws and regulations, are continuously developing and evolving and there is significant uncertainty with respect to how compliance with these laws and regulations may evolve and the costs and complexity of future compliance.

We are also subject to federal, state, local and foreign environmental, safety and health laws and regulations concerning, among other things, emissions to the air, discharges to land and water and the generation, handling, treatment and disposal of hazardous waste and other materials. Under certain of these laws, we can be held strictly liable for hazardous substance contamination of any real property we have ever owned, operated or used as a disposal site or for natural resource damages associated with such contamination. We are also required to maintain various related permits and licenses, many of which require periodic modification and renewal. The operation of manufacturing plants unavoidably entails environmental, safety and health risks, and we could incur material unanticipated costs or liabilities in the future if any of these risks were realized in ways or to an extent that we did not anticipate.

We believe that we operate in compliance, in all material respects, with applicable environmental laws and regulations. Compliance with environmental laws and regulations requires continuing management effort and expenditures. We have incurred, and will continue to incur, costs and capital expenditures to comply with these laws and regulations and to obtain and maintain the necessary permits and licenses. We believe that the cost of complying with environmental laws and regulations will not have a material effect on our earnings, liquidity or competitive position but cannot assure that material compliance-related costs and expenses may not arise in the future. For example, future adoption of new or amended environmental laws, regulations or requirements or newly discovered contamination or other circumstances could require us to incur costs and expenses that may have a material effect, but cannot be presently anticipated.

We believe that policies, practices and procedures have been properly designed to prevent unreasonable risk of material environmental damage arising from our operations. We accrue for estimated environmental liabilities with charges to expense and believe our environmental accrual is adequate to provide for our portion of the costs of all such known environmental liabilities. Compliance with federal, state, local and foreign environmental protection laws during 2020 had no material effect on our capital expenditures, earnings or competitive position. Based upon consideration of currently available information, we believe liabilities for environmental matters will not have a material adverse effect on our financial position, operating results or liquidity, but we cannot assure that material environmental liabilities may not arise in the future.

For a discussion of the risks associated with these laws and regulations, see Part I, Item 1A, "Risk Factors."

Human Capital Resources

Employee Profile

As of October 31, 2020, we had 7,555 full-time and part-time employees, including 137 at our Amherst, Ohio, facility who are represented by a collective bargaining agreement that expires on November 12, 2022.

Health and Safety

The health and safety of our employees is our highest priority, and this is consistent with our operating philosophy. When the pandemic first impacted our employees in China, we began hosting cross-functional global team meetings to proactively manage employee safety. Teams from around the world came together to ensure our employees had access to masks, thermometers, protective gloves and sanitizing supplies in order to protect not only themselves, but their families as well. This Nordson spirit continued as the virus spread around the world. Closely following the recommendations of the World Health Organization, the U.S. Centers for Disease Control and local governments, we took action to ensure our employees were safe:

- adjusted work schedules to allow the proper amount of social distance between employees;
- increased hygiene, cleaning and sanitizing procedures at all locations;
- implemented temperature-taking protocols upon entering facilities;
- provided additional personal protective equipment to employees;
- enabled employees to work from home where possible;
- restricted travel and encouraged quarantine upon return;
- developed a special COVID-19 pandemic leave policy that encouraged employees to take time off for illness or caretaking while maintaining steady wages;
- established strict protocols and screening for outside guests; and
- launched a COVID-19 pandemic intranet site to increase communications and ensure our employees had access to up-to-date and accurate information.

We manufacture products deemed essential to critical infrastructure industries, including health and safety, food and agriculture, and energy, and as a result, all of our production sites have continued to operate during the COVID-19 pandemic. As such, we have invested in creating physically safe work environments for our employees.

Total Rewards

As part of our compensation philosophy, we believe that we must offer and maintain market competitive total rewards programs for our employees in order to attract and retain superior talent. These programs not only include base wages and incentives in support of our pay for performance culture, but also health, welfare, and retirement benefits. We focus many programs on employee wellness and have implemented solutions including mental health support access, telemedicine, and healthy weight loss programs. We believe that these solutions have helped us successfully manage healthcare and prescription drug costs for our employee population.

In the U.S., we match contributions to a tax-qualified defined contribution retirement savings plan (the "Savings Plan") for all eligible employees, in an amount equal to 50 cents for every dollar contributed by the employee until the employee contributions reach six percent of her or his base compensation. All contributions by employees into the Savings Plan are fully vested immediately. Company contributions have a three-year graded vesting schedule and vest at 33 1/3% each year until fully vested after 3 years of employment. We also maintain a non-qualified, unfunded, and unsecured deferred compensation plan for the benefit of eligible management employees whose benefits under the Savings Plan are limited by the benefit restrictions of Section 415 of the Internal Revenue Code. In addition, all eligible non-union employees participate in a Company-sponsored tax-qualified pension plan for U.S.-based salaried employees (the "Salaried Pension Plan"). The Salaried Pension Plan is designed to work together with social security benefits to provide employees with 30 years of service retirement income that is approximately 55% of eligible compensation, subject to the Internal Revenue Code maximum monthly benefit. Participants fully vest in the Salaried Pension Plan after 5 years of service. All eligible union employees participate in a Company-sponsored tax-qualified pension plan for U.S.-based hourly employees (the "Hourly Pension Plan"). The Hourly Pension Plan provides a multiplier for each year of service to supplement employees' retirement income. We also maintain a supplemental retirement benefit restoration plan ("Excess Defined Benefit Pension Plan") which is an unfunded, non-qualified plan that is designed to provide retirement benefits to U.S.-based eligible participants as a replacement for those retirement benefits limited by regulations under the Internal Revenue Code.

Together, the Pension Plan and Excess Defined Benefit Pension Plan are intended to provide executive officers with retirement income at a level equivalent to that provided to other employees under the Pension Plan.

We also provide service awards which show appreciation and thanks to longstanding employees with 5 or more years of service. Service milestones are recognized at each five-year increment by presentation of a digital and/or printed certificate with an invitation to select a recognition award via an online catalog.

Talent

Our key talent philosophy is to develop talent from within and supplement with external hires. This approach has yielded a deep understanding among our employee base of our business, products, and customers, while adding new employees and ideas in support of our continuous improvement mindset. We believe that our average tenure across the globe – 10.18 years as of the end of the fiscal year 2020 – reflects the strong engagement of our employees and is reflective of our positive workplace culture. Our talent acquisition team uses internal and external resources to recruit highly skilled and talented workers, and we encourage employee referrals for open positions.

Talent development and succession planning for critical roles is a cornerstone of our talent program. Development plans are created and monitored for critical roles to ensure progress is made along the established timelines. Development plans also intersect with our mission, particularly as we strive to be responsible to our communities.

One of our core values—Respect for People—reflects the behavior we strive to include in every aspect of the way we conduct business. Our diversity and inclusion initiatives support our goal that everyone throughout the Company is engaged in creating an inclusive workplace, and we have begun work on building diverse talent pools as part of our recruitment efforts. We strive to promote inclusion through "Inclusive Leadership" training across the Company. With the support of our board of directors, we continue to explore additional diversity and inclusion initiatives.

Community

At Nordson, we have a long and proud history of investing in the communities where we live and work. Through the Nordson Corporation Foundation (the "Foundation"), we give back by providing grants to nonprofits in communities where we have facilities employing more than 100 people. In recent years, we have extended our reach internationally, with giving programs in nine international locations. Since 1989, we have donated more than $113 million to communities where we live and work. In addition, our employees volunteered more than 106,000 hours through our Time 'N Talent program.

In response to the COVID-19 pandemic, the Foundation donated to Give2Asia to support frontline healthcare workers battling the spread of the novel coronavirus in China. The Foundation also donated $1 million from its assets toward the global COVID-19 pandemic response. These funds were split evenly among communities in the United States and other countries, reflecting the roughly equal split of where our employees work. A donation of $500,000 was split among U.S.-based nonprofits in the communities where our employees live and work. In Europe, an additional $500,000 was donated to the COVID-19 Solidarity Response Fund, which is co-founded by the United Nations and the World Health Organization.

Available Information

Our annual report to the Securities and Exchange Commission (the "SEC") (Form 10-K), quarterly reports (Form 10-Q) and current reports (Form 8-K) and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934 are available free of charge at https://investors.nordson.com as soon as reasonably practical after such material is electronically filed with, or furnished to, the SEC. Copies of these reports may also be obtained free of charge by sending written requests to Corporate Communications, Nordson Corporation, 28601 Clemens Road, Westlake, Ohio 44145. The contents of our website are not incorporated by reference herein and are not deemed to be a part of this report.

Item 1A. Risk Factors

In an enterprise as diverse as ours, a wide range of factors could affect future performance. We discuss in this section some of the risk factors that could materially and adversely affect our business, financial condition, value and results of operations. You should consider these risk factors in connection with evaluating the forward-looking statements contained in this Annual Report on Form 10-K because these factors could cause our actual results and financial condition to differ materially from those projected in forward-looking statements.

Risks Related to the COVID-19 pandemic

The COVID-19 pandemic has negatively disrupted, and may continue to have a negative impact, which could be material, on our ability to operate, results of operations, financial condition, liquidity and capital investments.

In March 2020, the World Health Organization categorized the COVID-19 pandemic outbreak as a pandemic, and the President of the United States declared the COVID-19 pandemic outbreak a national emergency. COVID-19 continues to spread and intensify throughout the United States and other countries across the world, and the ultimate duration and severity of its effects are currently unknown. The COVID-19 pandemic has resulted in governments around the world implementing increasingly stringent measures to help control the spread of the virus, including quarantines, social distancing protocols, “shelter in place” and “stay at home” orders, travel restrictions, business curtailments, school closures and other measures. In addition, governments and central banks in several parts of the world have enacted fiscal and monetary stimulus measures to counteract the impacts of the COVID-19 pandemic.

The COVID-19 pandemic has negatively disrupted, and may continue to negatively impact, our business. While we have continued to operate during the course of the COVID-19 pandemic in all of our production facilities and have supported multiple “critical infrastructure” sectors by manufacturing materials and products needed for medical supply chains, packaging, transportation, energy, communications, and other critical infrastructure industries, we have experienced unfavorable impacts on our manufacturing efficiencies due to the implementation of worker safety measures and cost increases from COVID-19 pandemic-related supply disruptions. We have invested and will continue to invest significant time and resources in modifying our business practices for the continued health and safety of our employees and in managing the impact of the COVID-19 pandemic on our global business. Our focus on managing and mitigating the impacts of the COVID-19 pandemic on our business, including complying with any new or modified government health regulations, for an unknown period of time may cause us to divert or delay the application of our resources toward other or new initiatives or investments, which may have a material adverse impact on our business and results of operations.

Governments around the world have implemented fiscal stimulus measures to counteract the effects of the COVID-19 pandemic. The magnitude and overall effectiveness of these actions remain uncertain. The full extent to which the COVID-19 pandemic will impact our business going forward will depend on future developments that are highly uncertain and cannot be accurately predicted, including, but not limited to, the duration and severity of the COVID-19 pandemic, actions by government authorities to contain the outbreak or treat its impact, such as reimposing previously lifted measures or putting in place additional restrictions, the widespread distribution and acceptance of an effective vaccine, and the extent and severity of the impact on our customers, operations, and suppliers, all of which are uncertain and cannot be predicted. Our future results of operations and liquidity could be adversely impacted by delays in payments of outstanding receivable amounts beyond normal payment terms, supply chain disruptions and uncertain demand.

Additionally, to the extent the COVID-19 pandemic adversely affects our business, results of operations or financial condition, it may heighten other risks described in this “Risk Factors” section below.

Risks Related to Economic Conditions

Changes in United States or international economic conditions, including declines in the industries we serve, could adversely affect the profitability of any of our operations.

In 2020, approximately 36 percent of our revenue was generated in the United States, while approximately 64 percent was generated outside the United States. The COVID-19 pandemic and related preventative and mitigation measures implemented by governments around the world have to date negatively impacted the global economy and created significant volatility and disruption of financial markets.

A general sustained slowdown in the global economy or in a particular region or industry or an increase in trade tensions with U.S. trading partners could negatively impact our business, financial condition or liquidity. Our largest markets include consumer non-durable, industrial, medical, electronics, consumer durable and automotive. A slowdown in any of these specific end markets could directly affect our revenue stream and profitability.

A portion of our product sales is attributable to industries and markets, such as the electronics, polymer processing and metal finishing industries, which historically have been cyclical and sensitive to relative changes in supply and demand and general economic conditions. The demand for our products depends, in part, on the general economic conditions of the industries or national economies of our customers. Downward economic cycles in our customers' industries or countries may reduce sales of some of our products. It is not possible to predict accurately the factors that will affect demand for our products in the future.

The current significant downturn in the health of the general economy, or any recession, depression or other sustained adverse market event resulting from the COVID-19 pandemic, could have an adverse effect on our revenues and financial performance, resulting in impairment of assets. We cannot predict the strength or duration of the current economic slowdown and instability or the timing of any recovery.

Our results have been and could continue to be impacted by uncertainty in U.S. trade policy, including uncertainty surrounding changes in tariffs, trade agreements or other trade restrictions imposed by the U.S. or other governments.

Our ability to conduct business can be significantly impacted by changes in tariffs, changes or repeals of trade agreements, including the impact of the "United States-Mexico-Canada Agreement" with Mexico and Canada, which replaced the North American Free Trade Agreement, or the imposition of other trade restrictions or retaliatory actions imposed by various governments. Other effects of these changes, including impacts on the price of raw materials, responsive actions from governments and the opportunity for competitors to establish a presence in markets where we participate, could also have significant impacts on our results. We cannot predict what further action may be taken with respect to tariffs or trade relations between the U.S. and other governments, and any further changes in U.S. or international trade policy could have an adverse impact on our business. Further, the level of impact from the COVID-19 pandemic and the reactions of governmental authorities and others thereto may have significant adverse effects on international trade policy.

Significant movements in foreign currency exchange rates or change in monetary policy may harm our financial results.

We are exposed to fluctuations in foreign currency exchange rates, particularly with respect to the euro, the yen, the pound sterling and the Chinese yuan. Any significant change in the value of the currencies of the countries in which we do business against the United States dollar could affect our ability to sell products competitively and control our cost structure, which could have a material adverse effect on our business, financial condition and results of operations. For additional detail related to this risk, see Part II, Item 7A, Quantitative and Qualitative Disclosure About Market Risk.

A significant portion of our consolidated revenues in 2020 were generated in currencies other than the United States dollar, which is our reporting currency. We recognize foreign currency transaction gains and losses arising from our operations in the period incurred. As a result, currency fluctuations between the United States dollar and the currencies in which we do business have caused and will continue to cause foreign currency transaction and translation gains and losses, which historically have been material and could continue to be material. We cannot predict the effects of exchange rate fluctuations upon our future operating results because of the number of currencies involved, the variability of currency exposures and the potential volatility of currency exchange rates. We take actions to manage our foreign currency exposure, such as entering into hedging transactions, where available, but we cannot assure that our strategies will adequately protect our consolidated operating results from the effects of exchange rate fluctuations. For example, uncertainty surrounding the impact of the COVID-19 pandemic and the effects of Brexit have caused increased volatility in global currency exchange rates that have resulted in the strengthening of the United States dollar against the foreign currencies in which we conduct business. Future adverse consequences arising from the COVID-19 pandemic and Brexit may include continued volatility in exchange rates. Any significant fluctuation in exchange rates may be harmful to our financial condition and results of operations. We also face risks arising from the imposition of exchange controls and currency devaluations. Exchange controls may limit our ability to convert foreign currencies into United States dollars or to remit dividends and other payments by our foreign subsidiaries or customers located in or conducting business in a country imposing controls. Currency devaluations diminish the United States dollar value of the currency of the country instituting the devaluation and, if they occur or continue for significant periods, could adversely affect our earnings or cash flow.

Risks Related to Our Business and Operations

The Company may be subject to risks relating to organizational changes.

We regularly execute organizational changes such as acquisitions, divestitures and realignments to support our growth and cost management strategies. We also engage in initiatives aimed to increase productivity, efficiencies and cash flow and to reduce costs. The Company commits significant resources to identify, develop and retain key employees to ensure uninterrupted leadership and direction. If we are unable to successfully manage these and other organizational changes, the ability to complete such activities and realize anticipated synergies or cost savings as well as our results of operations and financial condition could be materially adversely affected. We cannot offer assurances that any of these initiatives will be beneficial to the extent anticipated, or that the estimated efficiency improvements, incremental cost savings or cash flow improvements will be realized as anticipated or at all.

Political conditions in the U.S. and foreign countries in which we operate could adversely affect us.

We conduct our manufacturing, sales and distribution operations on a worldwide basis and are subject to risks associated with doing business both within and outside the United States. In 2020, approximately 64 percent of our total sales were generated outside the United States. We expect that international operations and United States export sales will continue to be important to our business for the foreseeable future. Both sales from international operations and export sales are subject in varying degrees to risks inherent in doing business outside the United States. Such risks include, but are not limited to, the following:

- risks of political or economic instability, such as Brexit;
- unanticipated or unfavorable circumstances arising from host country laws or regulations;
- threats of war, terrorism or governmental instability;
- changes in tax rates, adoption of new tax laws or other additional tax policies, and other proposals to reform United States and foreign tax laws that impact how United States multinational corporations are taxed on foreign earnings;
- restrictions on the transfer of funds into or out of a country;
- potential negative consequences from changes to taxation policies;
- the disruption of operations from labor and political disturbances;
- the imposition of tariffs, import or export licensing requirements and other potential changes in trade policies and relations arising from policy initiatives implemented by the U.S. presidential administration;
- exchange controls or other trade restrictions including transfer pricing restrictions when products produced in one country are sold to an affiliated entity in another country; and
- government responses to the COVID-19 pandemic.

Any of these events could reduce the demand for our products, limit the prices at which we can sell our products, interrupt our supply chain, or otherwise have an adverse effect on our operating performance.

Our international operations also depend upon favorable trade relations between the U.S. and those foreign countries in which our customers, subcontractors and materials suppliers have operations. A protectionist trade environment in either the U.S. or those foreign countries in which we do business, such as a change in the current tariff structures, export compliance or other trade policies, may materially and adversely affect our ability to sell our products in foreign markets. The current U.S. presidential administration has criticized existing trade agreements, and while it remains unclear what actions the current or future administration may take with respect to existing and proposed trade agreements, or restrictions on trade generally, more stringent export and import controls may be ultimately imposed in the future.

Increased information technology (IT) security threats and more sophisticated and targeted computer crime could pose a risk to our systems, networks, products, solutions and services.

We have experienced and expect to continue to experience cyber-attacks to our systems and networks. To date, we have not experienced any material breaches or material losses related to cyber-attacks. To conduct our business, we rely extensively on information technology systems, networks and services, some of which are managed, hosted and provided by third-party service providers. Increased global IT security threats and more sophisticated and targeted computer crime pose a risk to the security of our systems and networks and those of our third-party service providers and the confidentiality, availability and integrity of our data. Depending on their nature and scope, such threats could potentially lead to the compromising of confidential information, including but not limited to confidential information relating to customer or employee data, improper use of our systems and networks, manipulation and destruction of data, defective products, production downtimes and operational disruptions, which in turn could adversely affect our reputation, competitiveness and results of operations. A cyber-attack or other disruption may also result in financial loss, including potential fines for failure to safeguard data or losses in connection with any litigation that may result from a cyber-attack. Our insurance coverage may not be adequate to cover all the costs arising from such events.

We have taken steps and incurred costs to further strengthen the security of our computer systems and continue to assess, maintain and enhance the ongoing effectiveness of our information security systems. While we attempt to mitigate these risks by employing a number of measures, including employee training, comprehensive monitoring of our networks and systems, and maintenance of backup and protective systems, our systems, networks, products, solutions and services remain potentially vulnerable to advanced persistent threats. The techniques used by criminals to obtain unauthorized access to sensitive data change frequently and often are not recognizable until launched against a target. Accordingly, we may be unable to anticipate these techniques or implement adequate preventative measures. It is therefore possible that in the future we may suffer a criminal attack, unauthorized parties may gain access to personal information in our possession and we may not be able to identify any such incident in a timely manner.

The interpretation and application of data protection laws, including federal, state and international laws, relating to the collection, use, retention, disclosure, security and transfer of personally identifiable data in the U.S., Europe and elsewhere (including but not limited to the European Union's General Data Protection Regulation, the Brazilian General Data Protection Law and the California Consumer Privacy Act of 2018), are uncertain and evolving. It is possible that these laws may be interpreted and applied in a manner that is inconsistent with our data practices. In addition, as a result of existing or new data protection requirements, we incur and expect to continue to incur significant ongoing operating costs as part of our significant efforts to protect and safeguard our sensitive data and personal information. These efforts also may divert management and employee attention from other business and growth initiatives. A breach in information privacy could result in legal or reputational risks and could have a negative impact on our revenues and results of operations.

If our intellectual property protection is inadequate, others may be able to use our technologies and tradenames and thereby reduce our ability to compete, which could have a material adverse effect on us, our financial condition and results of operations.

We regard much of the technology underlying our products and the trademarks under which we market our products as proprietary. The steps we take to protect our proprietary technology may be inadequate to prevent misappropriation of our technology, or third parties may independently develop similar technology. We rely on a combination of patents, trademark, copyright and trade secret laws, employee and third-party non-disclosure agreements and other contracts to establish and protect our technology and other intellectual property rights. The agreements may be breached or terminated, and we may not have adequate remedies for any breach, and existing trade secrets, patent and copyright law afford us limited protection. Policing unauthorized use of our intellectual property is difficult. A third party could copy or otherwise obtain and use our products or technology without authorization. Litigation may be necessary for us to defend against claims of infringement or to protect our intellectual property rights and could result in substantial cost to us and diversion of our efforts. Further, we might not prevail in such litigation, which could harm our business.

Our products could infringe on the intellectual property of others, which may cause us to engage in costly litigation and, if we are not successful, could cause us to pay substantial damages and prohibit us from selling our products.

Third parties may assert infringement or other intellectual property claims against us based on their patents or other intellectual property claims, and we may have to pay substantial damages, possibly including treble damages, if it is ultimately determined our products infringe. We may have to obtain a license to sell our products if it is determined that our products infringe upon another party's intellectual property. We might be prohibited from selling our products before we obtain a license, which, if available at all, may require us to pay substantial royalties. Even if infringement claims against us are without merit, defending these types of lawsuits takes significant time, may be expensive and may divert management attention from other business concerns.

Failure to retain our existing senior management team or the inability to attract and retain qualified personnel could hurt our business and inhibit our ability to operate and grow successfully.

During 2019, we experienced a leadership change with the appointment of a new President and Chief Executive Officer and, in 2020, we appointed a new Chief Financial Officer. Our success will continue to depend to a significant extent on the continued service of our executive management team and the ability to recruit, hire and retain other key management personnel to support our growth and operational initiatives and replace executives who retire or resign. Failure to retain our leadership team and attract and retain other important management and technical personnel could place a constraint on our global growth and operational initiatives, possibly resulting in inefficient and ineffective management and operations, which would likely harm our revenues, operations and product development efforts and eventually result in a decrease in profitability.

Risks Related to the Execution of Our Strategy

We continually assess the strategic fit of our existing businesses and may divest or otherwise dispose of businesses that are deemed not to fit with our strategic plan or are not achieving the desired return on investment, and we cannot be certain that our business, operating results and financial condition will not be materially and adversely affected.

A successful divestiture depends on various factors, including reaching an agreement with potential buyers on terms we deem attractive, as well as our ability to effectively transfer liabilities, contracts, facilities, and employees to any purchaser, identify and separate the intellectual property to be divested from the intellectual property that we wish to retain, reduce fixed costs previously associated with the divested assets or business, and collect the proceeds from any divestitures. These efforts require varying levels of management resources, which may divert our attention from other business operations. If we do not realize the expected benefits of any divestiture transaction, our consolidated financial position, results of operations, and cash flows could be negatively impacted. In addition, divestitures of businesses involve a number of risks, including significant costs and expenses, the loss of customer relationships, and a decrease in revenues and earnings associated with the divested business. Furthermore, divestitures potentially involve significant post-closing separation activities, which could involve the expenditure of material financial resources and significant employee resources. Any divestiture may result in a dilutive impact to our future earnings if we are unable to offset the dilutive impact from the loss of revenue associated with the divestiture, as well as significant write-offs, including those related to goodwill and other intangible assets, which could have a material adverse effect on our results of operations and financial condition.

If we fail to develop new products or enhance existing products, or our customers do not accept the new or enhanced products we develop, our revenue and profitability could be adversely impacted.

Innovation is critical to our success. We believe that we must continue to enhance our existing products and to develop and manufacture new products with improved capabilities in order to continue to be a leading provider of precision technology solutions. We also believe that we must continue to make improvements in our productivity in order to maintain our competitive position. Difficulties or delays in research, development or production of new or enhanced products or failure to gain market acceptance of new or enhanced products and technologies may reduce future sales and adversely affect our competitive position. We continue to invest in the development and marketing of new or enhanced products. There can be no assurance that we will have sufficient resources to make such investments, that we will be able to make the technological advances necessary to maintain competitive advantages or that we can recover major research and development expenses. If we fail to make innovations, launch products with quality problems or the market does not accept our new products, our financial condition, results of operations, cash flows and liquidity could be adversely affected. In addition, as new or enhanced products are introduced, we must successfully manage the transition from older products to minimize disruption in customers' ordering patterns, avoid excessive levels of older product inventories and ensure that we can deliver sufficient supplies of new products to meet customers' demands.

Our growth strategy includes acquisitions, and we may not be able to execute on our acquisition strategy or integrate acquisitions successfully.

Our recent historical growth has depended, and our future growth is likely to continue to depend, in part on our acquisition strategy and the successful integration of acquired businesses into our existing operations. We intend to continue to seek additional acquisition opportunities both to expand into new markets and to enhance our position in existing markets throughout the world. We cannot assure we will be able to successfully identify suitable acquisition opportunities, prevail against competing potential acquirers, negotiate appropriate acquisition terms, obtain financing that may be needed to consummate such acquisitions, complete proposed acquisitions, successfully integrate acquired businesses into our existing operations or expand into new markets. In addition, we cannot assure that any acquisition, once successfully integrated, will perform as planned, be accretive to earnings, or prove to be beneficial to our operations and cash flow.

The success of our acquisition strategy is subject to other risks and uncertainties, including:

- our ability to realize operating efficiencies, synergies or other benefits expected from an acquisition, and possible delays in realizing the benefits of the acquired company or products;
- diversion of management's time and attention from other business concerns;
- difficulties in retaining key employees, customers or suppliers of the acquired business;
- difficulties in maintaining uniform standards, controls, procedures and policies throughout acquired companies;
- adverse effects on existing business relationships with suppliers or customers;

- the risks associated with the assumption of product liabilities or contingent or undisclosed liabilities of acquisition targets; and
- the ability to generate future cash flows or the availability of financing.

In addition, an acquisition could adversely impact our operating performance as a result of the incurrence of acquisition-related debt, pre-acquisition potential tax liabilities, acquisition expenses, the amortization of acquisition-acquired assets, or possible future impairments of goodwill or intangible assets associated with the acquisition.

We may also face liability with respect to acquired businesses for violations of environmental laws occurring prior to the date of our acquisition, and some or all of these liabilities may not be covered by environmental insurance secured to mitigate the risk or by indemnification from the sellers from which we acquired these businesses. We could also incur significant costs, including, but not limited to, remediation costs, natural resources damages, civil or criminal fines and sanctions and third-party claims, as a result of past or future violations of, or liabilities, associated with environmental laws.

Any impairment in the value of our intangible assets, including goodwill, would negatively affect our operating results and total capitalization.

Our total assets reflect substantial intangible assets, primarily goodwill. The goodwill results from our acquisitions and represents the excess of cost over the fair value of the identifiable net assets we acquired. We assess at least annually whether there has been any impairment in the value of our intangible assets. If future operating performance at one or more of our business units were to fall significantly below current levels, if competing or alternative technologies emerge, if market conditions for acquired businesses decline, if significant and prolonged negative industry or economic trends exist, if our stock price and market capitalization declines, or if future cash flow estimates decline, we could incur, under current applicable accounting rules, a non-cash charge to operating earnings for goodwill impairment. Any determination requiring the write-off of a significant portion of unamortized intangible assets would negatively affect our results of operations and equity book value, the effect of which could be material.

<u>Risks Related to Legal, Compliance and Regulatory Matters</u>

Changes in United States and international tax law may have a material adverse effect on our business, financial condition and results of operations.

We are subject to income taxes in the United States and various foreign jurisdictions. Changes in applicable domestic or foreign tax laws and regulations, or their interpretation and application, including the possibility of retroactive effect, could affect our business, financial condition and profitability by increasing our tax liabilities. Our future results of operations could be adversely affected by changes in our effective tax rate as a result of a change in the mix of earnings in jurisdictions with differing statutory tax rates, changes in our overall profitability, changes in tax legislation and rates, changes in generally accepted accounting principles and changes in the valuation of deferred tax assets and liabilities. The U.S. federal government may adopt changes to international trade agreements, tariffs, taxes and other government rules and regulations. While we cannot predict what changes will actually occur with respect to any of these items, such changes could affect our business and results of operations.

We may be exposed to liabilities under the Foreign Corrupt Practices Act (FCPA), which could have a material adverse effect on our business.

We are subject to compliance with various laws and regulations, including the FCPA, UK Bribery Act and similar worldwide anti-bribery and anti-corruption laws, which generally prohibit companies and their intermediaries from engaging in bribery or making other improper payments to private or public parties for the purpose of obtaining or retaining business or gaining an unfair business advantage. The FCPA also requires proper record keeping and characterization of such payments in our reports filed with the SEC. Our employees are trained and required to comply with these laws, and we are committed to legal compliance and corporate ethics. Violations of these laws could result in severe criminal or civil sanctions and financial penalties and other consequences that may have a material adverse effect on our business, reputation, financial condition or results of operations.

The level of returns on pension plan assets and changes in the actuarial assumptions used could adversely affect us.

Our operating results may be positively or negatively impacted by the amount of expense we record for our defined benefit pension plans. U.S. GAAP requires that we calculate pension expense using actuarial valuations, which are dependent upon our various assumptions including estimates of expected long-term rate of return on plan assets, discount rates for future payment obligations, and the expected rate of increase in future compensation levels. Our pension expense and funding requirements may also be affected by our actual return on plan assets and by legislation and other government regulatory actions. Changes in assumptions, laws or regulations could lead to variability in operating results and could have a material adverse impact on liquidity.

Risks Related to Our Capital Structure

Our inability to comply with our existing credit facilities' restrictive covenants or to access additional sources of capital could impede growth or the repayment or refinancing of existing indebtedness.

The limits imposed on us by the restrictive covenants contained in our credit facilities could prevent us from making acquisitions or cause us to lose access to these facilities.

Our existing credit facilities contain restrictive covenants that limit our ability to, among other things:

- borrow money or guarantee the debts of others;
- use assets as security in other transactions;
- make restricted payments or distributions; and
- sell or acquire assets or merge with or into other companies.

In addition, our credit facilities require us to meet financial ratios, including a "Leverage Ratio" and an "Interest Coverage Ratio," both as defined in the credit facilities.

These restrictions could limit our ability to plan for or react to market conditions or meet extraordinary capital needs and could otherwise restrict our financing activities.

Our ability to comply with the covenants and other terms of our credit facilities will depend on our future operating performance. If we fail to comply with such covenants and terms, we may be in default and the maturity of the related debt could be accelerated and become immediately due and payable. We may be required to obtain waivers from our lenders in order to maintain compliance under our credit facilities, including waivers with respect to our compliance with certain financial covenants. If we are unable to obtain necessary waivers and the debt under our credit facilities is accelerated, we would be required to obtain replacement financing at prevailing market rates.

We may need new or additional financing in the future to expand our business or refinance existing indebtedness. If we are unable to access capital on satisfactory terms and conditions, we may not be able to expand our business or meet our payment requirements under our existing credit facilities. Our ability to obtain new or additional financing will depend on a variety of factors, many of which are beyond our control. We may not be able to obtain new or additional financing because we have substantial debt or because we may not have sufficient cash flow to service or repay our existing or future debt. In addition, depending on market conditions and our financial performance, neither debt nor equity financing may be available on satisfactory terms or at all. Finally, as a consequence of worsening financial market conditions, our credit facility providers may not provide the agreed credit if they become undercapitalized.

Changes in interest rates could adversely affect us.

Any period of interest rate increases may adversely affect our profitability. At October 31, 2020, we had $1,105,995 of total debt and notes payable outstanding, of which 51 percent was priced at interest rates that float with the market. A one percentage point increase in the interest rate on the floating rate debt in 2020 would have resulted in approximately $6,535 of additional interest expense. A higher level of floating rate debt would increase the exposure to changes in interest rates. For additional detail related to this risk, see Part II, Item 7A, Quantitative and Qualitative Disclosures About Market Risk. Additionally, the interest rates on some of our debt is tied to LIBOR. In July 2017, the head of the United Kingdom's Financial Conduct Authority announced its intention to phase out the use of LIBOR by the end of 2023. The uncertainty regarding the future of LIBOR, as well as the transition from LIBOR to another benchmark rate or rates could have adverse impacts on our outstanding debt and notes payable that currently use LIBOR as a benchmark rate, and ultimately, adversely affect our financial condition and results of operations.

General Risk Factors

The insurance that we maintain may not fully cover all potential exposures.

We maintain property, business interruption and casualty insurance but such insurance may not cover all risks associated with the hazards of our business and is subject to limitations, including deductibles and maximum liabilities covered. We are potentially at risk if one or more of our insurance carriers fail. Additionally, severe disruptions in the domestic and global financial markets could adversely impact the ratings and survival of some insurers. In the future, we may not be able to obtain coverage at current levels, and our premiums may increase significantly on coverage that we maintain.

Our business and operating results may be adversely affected by natural disasters or other catastrophic events beyond our control.

While we have taken precautions to prevent production and service interruptions at our global facilities, severe weather conditions such as hurricanes or tornadoes, as well as major earthquakes, wildfires and other natural disasters, as well as cyberterrorism, in areas in which we have manufacturing facilities or from which we obtain products may cause physical damage to our properties, closure of one or more of our manufacturing or distribution facilities, lack of an adequate work force in a market, temporary disruption in the supply of inventory, disruption in the transport of products and utilities, and delays in the delivery of products to our customers. Any of these factors may disrupt our operations and adversely affect our financial condition and results of operations.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

Our principal owned and leased properties (defined as greater than 20,000 square feet or related to a principal operation) as of October 31, 2020 were as follows:

Location	Description of Property	Approximate Square Feet
Amherst, Ohio [1, 2]	A manufacturing, laboratory and office complex	521,000
Chippewa Falls, Wisconsin [1]	A manufacturing, warehouse and office building (leased)	295,000
Austintown, Ohio [1]	A manufacturing, warehouse and office building (leased)	207,000
Carlsbad, California [2]	Three manufacturing and office buildings (leased)	181,000
Duluth, Georgia [1]	A manufacturing, laboratory and office building	176,000
Norwich, Connecticut [2]	A manufacturing, laboratory and office building	159,000
Swainsboro, Georgia [1]	A manufacturing building (leased)	136,000
East Providence, Rhode Island [2]	A manufacturing, warehouse and office building	116,000
Loveland, Colorado [2]	A manufacturing, warehouse and office building	115,000
Robbinsville, New Jersey [2]	A manufacturing, warehouse and office building (leased)	88,000
Salem, New Hampshire [2]	Two manufacturing, warehouse and office buildings (leased)	83,000
Minneapolis, Minnesota [2]	Two office, laboratory and warehouse buildings (leased)	69,000
Wixom, Michigan [1]	A manufacturing, warehouse and office building (leased)	64,000
Vista, California [2]	A manufacturing building (leased)	41,000
Hickory, North Carolina [1]	A manufacturing, warehouse and office building (leased)	41,000
Marlborough, Massachusetts [2]	An office, laboratory and warehouse building (leased)	30,000
Westlake, Ohio	Corporate headquarters	28,000
Liberty Lake, Washington [2]	A manufacturing, warehouse and office building (leased)	27,000
Chattanooga, Tennessee [2]	A manufacturing, warehouse and office building (leased)	25,000
Sunnyvale, California [2]	Two office, laboratory and warehouse buildings (leased)	24,000
Huntington Beach, California [2]	An office, laboratory and warehouse building (leased)	21,000
Münster, Germany [1]	Two manufacturing, warehouse and office buildings (leased)	598,000
Shanghai, China [1, 2]	Three manufacturing, warehouse, laboratory and office buildings	178,000
Lüneburg, Germany [1]	A manufacturing and laboratory building	129,000
Guaymas, Mexico [2]	Three manufacturing, warehouse and office buildings (leased)	89,000
Tokyo, Japan [1, 2]	Four office, laboratory and warehouse buildings (leased)	75,700
Bangalore, India [1, 2]	A manufacturing, warehouse and office building	56,000
Maastricht, Netherlands [1, 2]	A manufacturing, warehouse and office building	54,000
Chonburi, Thailand [1]	A manufacturing, warehouse and office building	52,000
Erkrath, Germany [1, 2]	An office, laboratory and warehouse building (leased)	50,000
Boyle, Ireland [2]	A manufacturing, warehouse and office building (leased)	47,000
Deurne, Netherlands [2]	A manufacturing, warehouse and office building (leased)	46,000
Suzhou, China [2]	A manufacturing, warehouse and office building (leased)	42,000
Elk Grove, Illinois [2]	A manufacturing, warehouse and office building (leased)	40,000
Aylesbury, U.K. [1, 2]	A manufacturing, warehouse and office building (leased)	36,000
Galway, Ireland [2]	An office, laboratory and warehouse building (leased)	36,000
Seongnam-City, South Korea [1, 2]	An office, laboratory and warehouse building (leased)	35,000
Shanghai, China [1, 2]	Three manufacturing, warehouse and office buildings (leased)	33,000
Pirmasens, Germany [1]	A manufacturing, warehouse and office building (leased)	32,000
Sao Paulo, Brazil [1, 2]	An office, laboratory and warehouse building (leased)	23,000
El Marques, Mexico [1, 2]	A warehouse and office building (leased)	22,000
Singapore [1]	Two warehouse and office buildings (leased)	22,000
Katzrin, Israel [2]	An office, laboratory and warehouse building (leased)	20,000

Business Segment - Property Identification Legend

[1] - Industrial Precision Solutions

[2] - Advanced Technology Solutions

The facilities listed have adequate, suitable and sufficient capacity (production and nonproduction) to meet present and foreseeable demand for our products.

Other properties at international subsidiary locations and at branch locations within the United States are leased. Lease terms do not exceed 25 years and generally contain a provision for cancellation with some penalty at an earlier date. Information about leases is reported in Note 11 of Notes to Consolidated Financial Statements that can be found in Part II, Item 8 of this document.

Item 3. Legal Proceedings

See Note 19, “Contingencies” in the accompanying Notes to Consolidated Financial Statements included in Part II, Item 8 of this Annual Report.

Item 4. Mine Safety Disclosures

None.

Information About Our Executive Officers

Our executive officers as of October 31, 2020, were as follows:

Name	Age	Officer Since	Position or Office with The Company and Business Experience During the Past Five (5) Year Period
Sundaram Nagarajan	58	2019	President and Chief Executive Officer, 2019
Joseph P. Kelley	48	2020	Executive Vice President, Chief Financial Officer, 2020
Gina A. Beredo	46	2018	Executive Vice President, General Counsel and Secretary, 2018
James E. DeVries	61	2012	Executive Vice President, 2012
John J. Keane	59	2003	Executive Vice President, 2005
Stephen P. Lovass	51	2017	Executive Vice President, 2017
Gregory P. Merk	49	2006	Executive Vice President, 2013
Shelly M. Peet	55	2007	Executive Vice President, 2009
Jeffrey A. Pembroke	53	2015	Executive Vice President, 2015
Joseph Stockunas	60	2015	Executive Vice President, 2015

Effective August 1, 2019, Mr. Nagarajan was appointed President and Chief Executive Officer and as a member of the Board of Directors of the Company. Prior to becoming our President and Chief Executive Officer, Mr. Nagarajan served as Executive Vice President, Automotive OEM Segment, with Illinois Tool Works Inc. (NYSE: ITW), a global manufacturer of a diversified range of industrial products and equipment, since 2015. Prior to that, Mr. Nagarajan served as Executive Vice President, Welding Segment, with Illinois Tool Works from 2010 to 2015. Mr. Nagarajan has served as a member of the Board of Directors of Sonoco Products Company (NYSE: SON) since 2015.

Effective July 6, 2020, Joseph P. Kelley was appointed as Executive Vice President, Chief Financial Officer of the Company. Mr. Kelley succeeded Gregory A. Thaxton, who stepped down from his role as Chief Financial Officer of the Company effective July 6, 2020 and was employed as an Executive Vice President of the Company until his retirement on August 28, 2020. Mr. Kelley served as Chief Financial Officer of Materion Corporation, (NYSE: MTRN), an advanced materials company, since 2015. Throughout his career, he served in roles of increasing financial responsibility at Materion, Avient Corporation (formerly known as PolyOne Corporation) (NYSE: AVNT), a specialty chemicals company, and Lincoln Electric (Nasdaq: LECO), a global manufacturer.

Effective January 1, 2018, Ms. Beredo was appointed Executive Vice President, General Counsel and Secretary. Ms. Beredo served as Deputy General Counsel and Assistant Secretary since joining the Company in 2013. Prior to joining the Company, Ms. Beredo served as Chief Litigation Counsel and Director of Compliance & Ethics at American Greetings Corporation, formerly traded on the NYSE. Prior to joining American Greetings, Ms. Beredo was an associate at BakerHostetler LLP.

On November 28, 2016, Mr. Lovass was elected as Corporate Vice President. Prior to joining the Company, Mr. Lovass served as President for one of the global sensors and controls businesses for Danaher Corporation (NYSE: DHR), an international Fortune 200, diversified science and technology company, from 2012 to 2016. Prior to joining Danaher, Mr. Lovass served as a Senior Vice President and Corporate Officer for Gerber Scientific, Inc., an automated systems manufacturer for sign-making, specialty graphics and packaging.

PART II

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

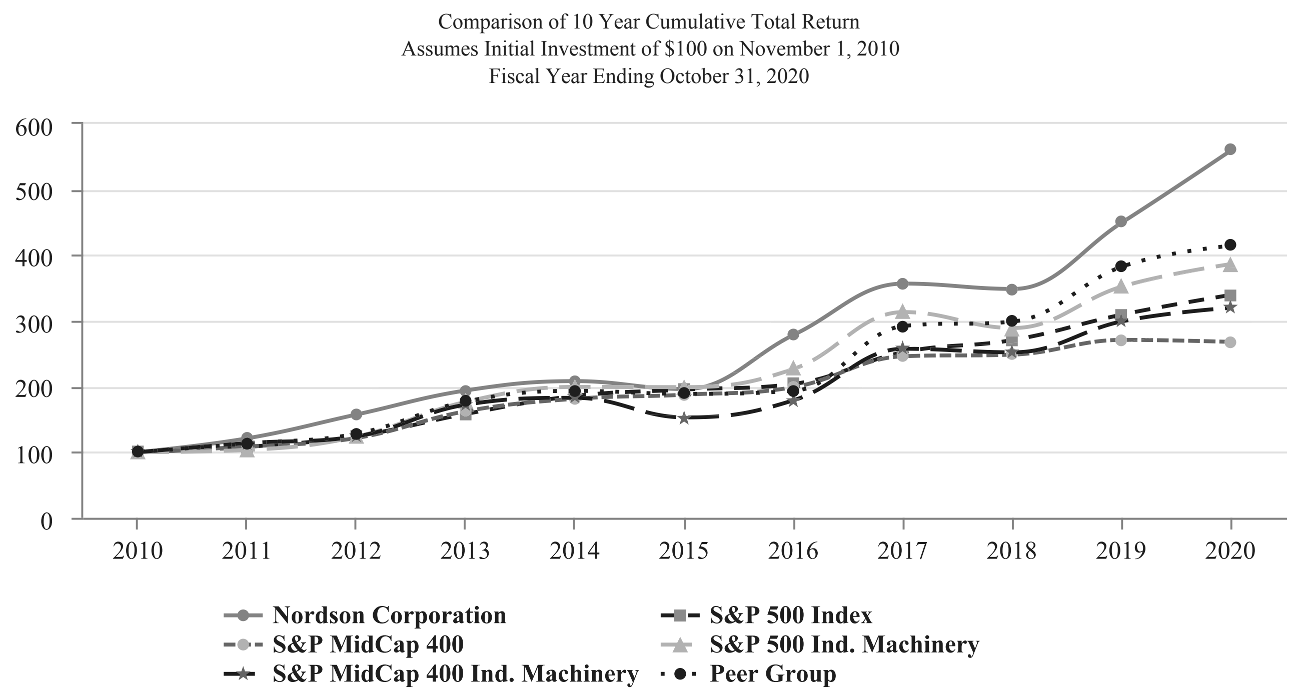
Market Information and Dividends

(a) Our common shares are listed on the Nasdaq Global Select Market under the symbol NDSN. As of November 30, 2020, there were 1,303 record shareholders.

While we have historically paid dividends to shareholders of our common stock on a quarterly basis, the declaration and payment of future dividends will depend on many factors, including but not limited to, our earnings, financial condition, business development needs and regulatory considerations, and are at the discretion of our board of directors.

Performance Graph

The following is a graph that compares the 10-year cumulative return, calculated on a dividend-reinvested basis, from investing $100 on November 1, 2010 in Nordson common shares, the S&P 500 Index, the S&P MidCap 400 Index, the S&P 500 Industrial Machinery Index, the S&P MidCap 400 Industrial Machinery Index and our Proxy Peer Group, which includes: AIN, AME, B, DCI, ENTG, EPAC, FLIR, GDI, GGG, GTLS, IEX, ITT, KEYS, LECO, NATI, ROP, TER, WTS, and WWD.



Company/Market/Peer Group	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Nordson Corporation	$100.00	$121.14	$157.44	$194.09	$208.21	$196.14	$279.33	$356.75	$348.63	$450.67	$560.87
S&P 500 Index	$100.00	$108.09	$124.52	$158.36	$185.71	$195.37	$204.17	$252.43	$270.97	$309.79	$339.87
S&P MidCap 400	$100.00	$108.55	$121.69	$162.44	$181.37	$187.58	$199.31	$246.11	$248.62	$271.03	$267.92
S&P 500 Ind. Machinery	$100.00	$103.46	$123.82	$176.80	$199.37	$199.07	$227.30	$313.37	$289.14	$352.62	$386.78
S&P MidCap 400 Ind. Machinery	$100.00	$113.73	$124.21	$172.45	$182.74	$152.97	$179.53	$257.49	$252.07	$299.53	$320.07
Peer Group	$100.00	$113.30	$128.23	$177.35	$193.38	$188.81	$193.62	$292.26	$299.10	$383.02	$414.51

Source: Zack's Investment Research

(b) Use of Proceeds. Not applicable.

(c) Issuer Purchases of Equity Securities

	Total Number of Shares Repurchased		Average Price Paid per Share	Total Number of Shares Repurchased as Part of Publicly Announced Plans or Programs (2)	Maximum Value of Shares That May Yet Be Purchased Under the Plans or Programs (2)
August 1, 2020 to August 31, 2020	1	(1)	$ 187.96	—	$ 447,703
September 1, 2020 to September 30, 2020	—		$ —	—	$ 447,703
October 1, 2020 to October 31, 2020	3		$ 198.39	3	$ 447,104
Total	4			3	

(1) Includes shares tendered for taxes related to vesting of restricted stock.

(2) In December 2014, the board of directors authorized a $300,000 common share repurchase program. In August 2015, the board of directors authorized the repurchase of up to an additional $200,000 of the Company's common shares. In August 2018, the board of directors authorized the repurchase of an additional $500,000 of the Company's common shares. Under the current authorization, the Company may repurchase shares on an annual basis sufficient to offset dilution of the compensation plans. Approximately $447,104 of the total $1,000,000 authorized remained available for share repurchases at October 31, 2020. Uses for repurchased shares include the funding of benefit programs including stock options and restricted stock. Shares purchased are treated as treasury shares until used for such purposes. The repurchase program is being funded using cash from operations and proceeds from borrowings under our credit facilities.

Item 6. Selected Financial Data

(In thousands except for per-share amounts)

Operating Data [a] [e]	2020	2019	2018	2017	2016
Sales	**$2,121,100**	$2,194,226	$2,254,668	$2,066,982	$1,808,994
Cost of sales	**990,632**	1,002,123	1,018,340	927,692	813,792
% of sales	**47**	46	45	45	45
Selling and administrative expenses	**693,552**	708,990	733,749	672,888	597,076
% of sales	**33**	32	33	33	33
Assets held for sale impairment charge	**87,371**	—	—	—	—
% of sales	**4**	—	—	—	—
Operating profit	**349,545**	483,113	502,579	466,402	398,126
% of sales	**16**	22	22	23	22
Net income	**249,539**	337,091	377,375	295,802	271,843
% of sales	**12**	15	17	14	15
Financial Data [a] [f]					
Net current assets [g]	**$ 657,523**	$ 533,569	$ 533,822	$ 240,626	$ 414,032
Net property, plant and equipment and other non-current assets	**2,654,044**	2,505,252	2,536,910	2,526,167	1,675,008
Total capital [b]	**2,656,693**	2,674,023	2,669,154	2,648,094	1,767,369
Total assets	**3,674,656**	3,516,447	3,421,012	3,414,539	2,420,583
Long-term liabilities	**1,552,576**	1,457,776	1,619,991	1,611,300	1,237,437
Shareholders' equity	**1,758,991**	1,581,045	1,450,741	1,155,493	851,603
Return on average total capital — % [c]	**10**	14	15	14	16
Return on average shareholders' equity — % [d]	**15**	23	28	30	37
Per-Share Data [a]					
Average number of common shares	**57,757**	57,462	57,970	57,533	57,060
Average number of common shares and common share equivalents	**58,473**	58,202	58,931	58,204	57,530
Basic earnings per share	**$ 4.32**	$ 5.87	$ 6.51	$ 5.14	$ 4.76
Diluted earnings per share	**4.27**	5.79	6.40	5.08	4.73
Dividends per common share	**1.53**	1.43	1.25	1.11	0.99
Book value per common share	**30.29**	27.45	25.00	20.02	14.86

(a) See accompanying Notes to Consolidated Financial Statements.

(b) Notes payable, plus current portion of long-term debt, plus long-term debt, minus cash and marketable securities, plus shareholders' equity.

(c) Net income plus after-tax interest expense on borrowings as a percentage of the average of quarterly borrowings (net of cash) plus shareholders' equity over the last five quarterly accounting periods.

(d) Net income as a percentage of average quarterly shareholders' equity over the last five quarterly accounting periods.

(e) Certain amounts for the years 2016 through 2018 have been adjusted to reflect the retrospective application of our reclassification of certain pension costs upon the adoption of a new accounting standard in 2019.

(f) Certain amounts for 2016 have been adjusted to reflect the retrospective application of our reclassification of debt issuance costs upon the adoption of a new accounting standard in 2017.

(g) Net current assets equal total current assets less total current liabilities. The 2020 increase was driven primarily by the decrease in current maturities of long-term debt.

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

NOTE REGARDING AMOUNTS AND FISCAL YEAR REFERENCES

In this annual report, all amounts related to United States dollars and foreign currency and to the number of Nordson Corporation’s common shares, except for per share earnings and dividend amounts, are expressed in thousands. Unless the context otherwise indicates, all references to “we,” “us,” “our,” or the “Company” mean Nordson Corporation.

Unless otherwise noted, all references to years relate to our fiscal year ending October 31.

Critical Accounting Policies and Estimates

Our Consolidated Financial Statements and accompanying notes have been prepared in accordance with accounting principles generally accepted in the United States. The preparation of these financial statements requires management to make estimates, judgments and assumptions that affect reported amounts of assets, liabilities, revenues and expenses. On an ongoing basis, we evaluate the accounting policies and estimates that are used to prepare financial statements. We base our estimates on historical experience and assumptions believed to be reasonable under current facts and circumstances. Actual amounts and results could differ from these estimates used by management.

Certain accounting policies that require significant management estimates and are deemed critical to our results of operations or financial position are discussed below. On a regular basis, critical accounting policies are reviewed with the Audit Committee of the board of directors.

Revenue recognition – A contract exists when it has approval and commitment from both parties, the rights of the parties are identified, payment terms are identified, the contract has commercial substance and collectability of the consideration is probable. Revenue is recognized when performance obligations under the terms of the contract with a customer are satisfied. Generally, our revenue results from short-term, fixed-price contracts and is recognized as of a point in time when the product is shipped or at a later point when the control of the product transfers to the customer. Refer to Note 1 to the Consolidated Financial Statements for further discussion regarding the Company's revenue recognition policy.

Business combinations – The acquisitions of our businesses are accounted for under the acquisition method of accounting. The amounts assigned to the identifiable assets acquired and liabilities assumed in connection with acquisitions are based on estimated fair values as of the date of the acquisition, with the remainder, if any, recorded as goodwill. The fair values are determined by management, taking into consideration information supplied by the management of the acquired entities, and other relevant information. Such information typically includes valuations obtained from independent appraisal experts, which management reviews and considers in its estimates of fair values. The valuations are generally based upon future cash flow projections for the acquired assets, discounted to present value. The determination of fair values requires significant judgment by management, particularly with respect to the value of identifiable intangible assets. This judgment could result in either a higher or lower value assigned to amortizable or depreciable assets. The impact could result in either higher or lower amortization and/or depreciation expense.

Goodwill – Goodwill is the excess of purchase price over the fair value of tangible and identifiable intangible net assets acquired in various business combinations. Goodwill is not amortized but is tested for impairment annually at the reporting unit level, or more often if indications of impairment exist. Our reporting units are one level below the Industrial Precision Solutions segment, and one level below the Advanced Technology Solutions segment.

We test goodwill in accordance with Accounting Standards Codification (ASC) 350. Goodwill impairment charge is recorded for the amount by which the carrying value of the reporting unit exceeds the fair value of the reporting unit, as calculated in the quantitative analysis described below. We did not record any goodwill impairment charges in 2020. We use an independent valuation specialist to assist with refining our assumptions and methods used to determine fair values using these methods. To test for goodwill impairment, we estimate the fair value of each of our reporting units using a combination of the Income Approach and the Market Approach.

The discounted cash flow method (Income Approach) uses assumptions for revenue growth, operating margin, and working capital turnover that are based on management’s strategic plans tempered by performance trends and reasonable expectations about those trends. Terminal value calculations employ a published formula known as the Gordon Growth Model Method that essentially captures the present value of perpetual cash flows beyond the last projected period assuming a constant Weighted Average Cost of Capital (WACC) methodology and growth rate. For each reporting unit, a sensitivity analysis is performed to vary the discount and terminal growth rates in order to provide a range of reasonableness for detecting impairment. Discount rates are developed using a WACC methodology. The WACC represents the blended average required rate of return for equity and debt capital based on observed market return data and company specific risk factors. For 2020, the discount rates used ranged from 7.0 percent to 8.8 percent depending upon the reporting unit's size, end market volatility, and projection risk.

In the application of the guideline public company method (Market Approach), fair value is determined using transactional evidence for similar publicly traded equity. The comparable company guideline group is determined based on relative similarities to each reporting unit since exact correlations are not available. An indication of fair value for each reporting unit is based on the placement of each reporting unit within a range of multiples determined for its comparable guideline company group. Valuation multiples are derived by dividing latest twelve-month performance for revenues and EBITDA into total invested capital, which is the sum of traded equity plus interest bearing debt less cash. These multiples are applied against the revenue and EBITDA of each reporting unit. While the implied indications of fair value using the guideline public company method yield meaningful results, the discounted cash flow method of the income approach includes management’s thoughtful projections and insights as to what the reporting units will accomplish in the near future. Accordingly, the reasonable, implied fair value of each reporting unit is a blend based on the consideration of both the Income and Market approaches.

In 2020, 2019, and 2018, the results of our annual impairment tests indicated no impairment.

The excess of fair value (FV) over carrying value (CV) was compared to the carrying value for each reporting unit. Based on the results shown in the table below and based on our measurement date of August 1, 2020, our conclusion is that no goodwill was impaired in 2020. Potential events or circumstances, such as a sustained downturn in global economies, could have a negative effect on estimated fair values.

	WACC	Excess of FV over CV	Goodwill
Industrial Precision Solutions Segment - Adhesives	7.0%	648%	$ 393,491
Industrial Precision Solutions Segment - Industrial Coating Systems	8.8%	584%	$ 24,058
Advanced Technology Solutions Segment - Electronics Systems	7.8%	343%	$ 27,962
Advanced Technology Solutions Segment - Fluid Management	7.8%	145%	$ 1,176,613
Advanced Technology Solutions Segment - Test & Inspection	8.5%	218%	$ 79,790

Pension plans and postretirement medical plans - The measurement of liabilities related to our pension plans and postretirement medical plans is based on management’s assumptions related to future factors, including interest rates, return on pension plan assets, compensation increases, mortality and turnover assumptions, and health care cost trend rates.

The weighted-average discount rate used to determine the present value of our domestic pension plan obligations was 2.85 percent at October 31, 2020 and 3.25 percent at October 31, 2019. The weighted-average discount rate used to determine the present value of our various international pension plan obligations was 1.01 percent at October 31, 2020, compared to 1.26 percent at October 31, 2019. The discount rates used for all plans were determined by using quality fixed income investments with a duration period approximately equal to the period over which pension obligations are expected to be settled.

In determining the expected return on plan assets, we consider both historical performance and an estimate of future long-term rates of return on assets similar to those in our plans. We consult with and consider the opinions of financial and actuarial experts in developing appropriate return assumptions. The expected rate of return (long-term investment rate) on domestic pension assets used to determine net benefit costs was 5.75 percent in 2020 and 6.00 percent in 2019. The average expected rate of return on international pension assets used to determine net benefit costs was 3.22 percent in 2020 and 3.96 percent in 2019.

The assumed rate of compensation increases used to determine the present value of our domestic pension plan obligations was 4.00 percent at both October 31, 2020 and October 31, 2019. The assumed rate of compensation increases used to determine the present value of our international pension plan obligations was 2.69 percent at October 31, 2020, compared to 3.12 percent at October 31, 2019.

Annual expense amounts are determined based on the discount rate used at the end of the prior year. Differences between actual and assumed investment returns on pension plan assets result in actuarial gains or losses that are amortized into expense over a period of years.

Economic assumptions have a significant effect on the amounts reported. The effect of a one percent change in the discount rate, expected return on assets and compensation increase is shown in the table below. Bracketed numbers represent decreases in expense and obligation amounts.

	United States		International	
	1% Point Increase	1% Point Decrease	1% Point Increase	1% Point Decrease
Discount rate:				
Effect on total net periodic pension cost in 2020	$ (7,315)	$ 9,402	$ (1,591)	$ 1,723
Effect on pension obligation as of October 31, 2020	$ (79,095)	$ 98,884	$ (16,979)	$ 20,430
Expected return on assets:				
Effect on total net periodic pension cost in 2020	$ (4,289)	$ 4,289	$ (398)	$ 398
Compensation increase:				
Effect on total net periodic pension cost in 2020	$ 6,433	$ (5,628)	$ 538	$ (507)
Effect on pension obligation as of October 31, 2020	$ 32,766	$ (29,256)	$ 3,628	$ (3,366)

With respect to the domestic postretirement medical plan, the discount rate used to value the benefit obligation was 2.84 percent at October 31, 2020 and 3.27 percent at October 31, 2019. The annual rate of increase in the per capita cost of covered benefits (the health care cost trend rate) is assumed to be 3.40 percent in 2021, decreasing gradually to 3.17 percent by 2026.

For the international postretirement medical plan, the discount rate used to value the benefit obligation was 2.94 percent at October 31, 2020 and 3.03 percent at October 31, 2019. The annual rate of increase in the per capita cost of covered benefits (the health care cost trend rate) is assumed to be 4.22 percent in 2021 to 4.05 percent by 2040.

The discount rate and the health care cost trend rate assumptions have a significant effect on the amounts reported. For example, a one-percentage point change in the discount rate and the assumed health care cost trend rate would have the following effects. Bracketed numbers represent decreases in expense and obligation amounts.

	United States		International	
	1% Point Increase	1% Point Decrease	1% Point Increase	1% Point Decrease
Discount rate:				
Effect on total net postretirement benefit cost components in 2020	$ (604)	$ 711	$ (2)	$ 2
Effect on postretirement obligation as of October 31, 2020	$ (11,184)	$ 13,899	$ (84)	$ 111
Health care trend rate:				
Effect on total net postretirement benefit cost components in 2020	$ 431	$ (345)	$ 7	$ (5)
Effect on postretirement obligation as of October 31, 2020	$ 11,019	$ (9,100)	$ 103	$ (80)

Employees hired after January 1, 2002, are not eligible to participate in the domestic postretirement medical plan.

Pension and postretirement expenses in 2021 are expected to be approximately $5,500 lower than 2020.

Income taxes – Income taxes are estimated based on income for financial reporting purposes. Deferred income taxes reflect the net tax effect of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes and certain changes in valuation allowances. We provide valuation allowances against deferred tax assets if, based on available evidence, it is more likely than not that some portion or all of the deferred tax assets will not be realized.

Management believes the valuation allowances are adequate after considering future taxable income, allowable carryforward periods and ongoing prudent and feasible tax planning strategies. In the event we were to determine that we would be able to realize the deferred tax assets in the future in excess of the net recorded amount (including the valuation allowance), an adjustment to the valuation allowance would increase income in the period such determination was made. Conversely, should we determine that we would not be able to realize all or part of the net deferred tax asset in the future, an adjustment to the valuation allowance would be expensed in the period such determination was made.

Further, at each interim reporting period, we estimate an effective income tax rate that is expected to be applicable for the full year. Significant judgment is involved regarding the application of global income tax laws and regulations and when projecting the jurisdictional mix of income. Additionally, interpretation of tax laws, court decisions or other guidance provided by taxing authorities influences our estimate of the effective income tax rates. As a result, our actual effective income tax rates and related income tax liabilities may differ materially from our estimated effective tax rates and related income tax liabilities. Any resulting differences are recorded in the period they become known.

2020 compared to 2019

We had two acquisitions during 2020, Fluortek, Inc. and vivaMOS Ltd. which are both included within the Advanced Technology Solutions segment. Refer to Note 3 to the Consolidated Financial Statements for further discussion. As used throughout this Form 10-K, geographic regions include the Americas (Canada, Mexico and Central and South America), Asia Pacific (excluding Japan), Europe, Japan, and the United States.

Worldwide sales for 2020 were $2,121,100, a decrease of 3.3 percent from 2019 sales of $2,194,226. The decrease consisted of a 3.7 percent decline in sales volume and unfavorable currency translation effects which decreased sales by 0.2 percent partially offset by 0.6 percent growth from acquisitions.

Sales outside the United States accounted for 64.4 percent of total sales in 2020, as compared to 65.4 percent in 2019. On a geographic basis, sales in the United States were $755,642, a decrease of 0.4 percent from 2019. The decrease in sales consisted of a 1.1 percent decrease in sales volume partially offset by a 0.7 percent increase from acquisitions. In the Americas region, sales were $141,473, a decrease of 15.6 percent from 2019, with volume decreasing 14.8 percent and unfavorable currency effects of 3.8 percent partially offset by a 3.0 percent increase from acquisitions. Sales in Europe were $536,636, a decrease of 6.1 percent from 2019. The decrease in sales consisted of a 6.4 percent volume decrease and unfavorable currency effects of 0.1 percent partially offset by a 0.4 percent increase from acquisitions. Sales in Japan were $126,601, a decrease of 0.1 percent from 2019, with volume decreasing 2.1 percent partially offset by favorable currency effects of 1.8 percent and a 0.2 percent increase from acquisitions. Sales in the Asia Pacific region were $560,748, a decrease of 1.6 percent from 2019, with volume decreasing 1.7 percent and unfavorable currency effects of 0.1 percent. partially offset by a 0.2 percent increase from acquisitions.

Cost of sales were $990,632 in 2020, down 1.1 percent from $1,002,123 in 2019. Gross profit, expressed as a percentage of sales, decreased to 53.3 percent in 2020 from 54.3 percent in 2019. Of the 1.0 percentage point decrease in gross margin, unfavorable product mix contributed 0.8 of a percentage point, higher costs and adjustments related to cost structure simplification actions contributed 0.2 of a percentage point, unfavorable currency translation effects contributed 0.1 of a percentage point, and an inventory step-up related to acquisitions contributed 0.1 of a percentage point. These were partially offset by 0.2 of a percentage point due to the first year effect of acquisitions. Severance costs were incurred in both of our segments as part of cost structure simplification actions made to improve operational efficiencies.

Selling and administrative expenses were $693,552 in 2020, compared to $708,990 in 2019. Of the 2.2 percent decrease, lower base business costs contributed 3.7 percentage points, and favorable currency translation effects contributed 0.2 of a percentage point. These improvements were partially offset by 1.0 percentage point due to higher severance costs, and 0.7 of a percentage point due to the first year effect of acquisitions.

Selling and administrative expenses as a percentage of sales increased to 32.7 percent in 2020 from 32.3 percent in 2019. Of the 0.4 percentage point increase, higher severance costs contributed 0.5 of a percentage point, and the first year effect of acquisitions contributed 0.1 of a percentage point. These increases were partially offset by lower base business costs of 0.2 of a percentage point.

In the fourth quarter of 2020, we committed to a plan to sell our screws and barrels product line within the Adhesives reporting unit under our Industrial Precision Solutions segment and determined that it met the criteria to be classified as held for sale. The decision was part of a strategy to focus resources on core strategies and businesses and the Board of Directors authorized the disposition on October 23, 2020. As a result of this decision, the Company incurred a non-cash, assets held for sale impairment charge of $87,371. Refer to Note 4 to the Consolidated Financial Statements for further discussion.

Operating profit as a percentage of sales decreased to 16.5 percent in 2020 compared to 22.0 percent in 2019. Of the 5.5 percentage point decline in operating margin, the assets held for sale impairment charge contributed 4.1 percentage points, unfavorable absorption due to lower sales volume and unfavorable product mix contributed 0.8 of a percentage point, higher severance costs contributed 0.5 of a percentage point, and the amortization of the step-up of acquired inventory, unfavorable foreign currency translation effects, and the first-year effect of acquisitions combined to contribute a negative impact of 0.3 of a percentage point. This decline was partially offset by 0.2 of a percentage point due to lower base business costs.

Operating capacity for each of our segments can support fluctuations in order activity without significant changes in operating costs. Also, currency translation affects reported operating margins. Operating margins for each segment were unfavorably impacted by a stronger dollar primarily against the Chinese Yuan, Mexican Peso, and Brazilian Real during 2020 as compared to 2019.

Interest expense in 2020 was $32,160, a decrease of $14,985, or 31.8 percent, from 2019. The decrease was due to lower average debt levels and lower variable interest rates compared to the prior year. Other expense in 2020 was $17,577 compared to other expense of $6,708 in 2019. Included in the current year's other expense were pension costs of $13,683 and $1,532 in foreign currency losses. Included in the prior year's other expense were pension costs of $7,136. The increased pension costs were principally attributable to increased amortization of net actuarial losses.

Income tax expense in 2020 was $51,950, or 17.2 percent of pre-tax income, as compared to $94,013, or 21.8 percent of pre-tax income in 2019. The income tax provision for 2020 included a tax benefit of $15,661 due to our share-based payment transactions which reduced the rate 5.2 percentage points.

Net income in 2020 included a non-cash, assets held for sale impairment charge of $87,371 related to our commitment to sell our screws and barrels product line within the Adhesives reporting unit under our Industrial Precision Solutions segment and the tax benefit of the impairment was $15,254. A portion of the impairment charge did not have related tax benefits.

Our income tax provision for 2019 included a provisional tax benefit of $4,866 to reflect the adjustment to the provisional amounts recognized in 2018 due to changes in interpretations and assumptions and the finalization of estimates related to the U.S. Tax Cuts and Jobs Act ("the Act"). We are paying the transition tax in installments over the eight-year period allowable under the Act. The remaining transition tax is included in other long-term liabilities in the Consolidated Balance Sheet at October 31, 2020.

Other provisions of the Act became effective for us in 2019. The Foreign-Derived Intangible Income provision generates a deduction against our U.S. taxable income for U.S. earnings derived offshore that utilize intangibles held in the U.S. Conversely, the Global Intangible Low-Taxed Income (“GILTI”) provision requires us to subject to U.S. taxation a portion of our foreign subsidiary earnings that exceed an allowable return. We elected to treat any GILTI inclusion as a period expense in the year incurred.

Our income tax provision for 2019 also included a tax benefit of $4,615 due to our share-based payment transactions.

Net income was $249,539, or $4.27 per diluted share, in 2020, compared to net income of $337,091, or $5.79 per diluted share, in 2019. This represented a 26.0 percent decrease in net income and a 26.3 percent decrease in diluted earnings per share. The decrease in both net income and diluted earnings per share was due primarily to the non-cash, assets held for sale impairment charge of $87,371.

Industrial Precision Solutions

Sales of the Industrial Precision Solutions segment were $1,143,423 in 2020, a decrease of 5.4 percent, from 2019 sales of $1,208,376. The decrease was the result of a sales volume decrease of 4.8 percent and unfavorable currency effects that decreased sales by 0.6 percent. Growth in product lines serving consumers in the non-durable end markets particularly in the United States, Americas, Europe and Japan regions was offset by weakness in sales of product lines serving industrial markets primarily in the Americas and Europe.

Operating profit as a percentage of sales decreased to 18.2 percent in 2020 compared to 27.2 percent in 2019. Of the 9.0 percentage point decline in operating margin, the assets held for sale impairment charge contributed 7.6 percentage points, unfavorable absorption due to lower sales volume and unfavorable product mix contributed 0.7 of a percentage point, higher severance costs contributed 0.5 of a percentage point, and unfavorable currency translation effects contributed 0.3 of a percentage point. This decline was minimally offset by 0.1 of a percentage point due to lower base business costs.

Advanced Technology Solutions

Sales of the Advanced Technology Solutions segment were $977,677 in 2020, a decrease of 0.8 percent from 2019 sales of $985,850. The decrease was the result of a sales volume decrease of 2.3 percent, partially offset by a 1.4 percent increase from the first-year effect of acquisitions and favorable currency effects that increased sales by 0.1 percent. Sales volume increases in certain medical product lines as well as test and inspection product lines serving electronics end markets were more than offset by weakness in fluid dispense product lines serving industrial end markets. The stable demand in medical is reflective of strength in some product lines, offset by meaningful softness in other medical products more closely tied to elective surgery, which have been reduced as a result of the COVID-19 pandemic.

Operating profit as a percentage of sales decreased to 19.6 percent in 2020 compared to 20.9 percent in 2019. Of the 1.3 percentage point decline in operating margin, unfavorable absorption due to lower sales volume and unfavorable product mix contributed 0.8 of a percentage point, higher severance costs contributed 0.4 of a percentage point, the first year effect of acquisitions contributed 0.3 of a percentage point, and an inventory step-up related to acquisitions contributed 0.2 of a percentage point. This decline was partially offset by 0.4 of a percentage point due to lower base business costs.

2019 compared to 2018

We had one acquisition during 2019, Optical Control GmbH & Co. KG ("Optical"), which is included within the Advanced Technology Solutions segment.

Worldwide sales for 2019 were $2,194,226, a decrease of 2.7 percent from 2018 sales of $2,254,668. The decrease was driven by unfavorable currency translation effects of 2.0 percent and a 1.1 percent decline in sales volume, partially offset by 0.4 percent growth from acquisitions.

Sales outside the United States accounted for 65.4 percent of total sales in 2019, as compared to 68.0 percent in 2018. On a geographic basis, sales in the United States were $758,383, an increase of 5.2 percent from 2018. The increase in sales consisted of 4.9 percent from sales volume and 0.3 percent from acquisitions. In the Americas region, sales were $167,661, an increase of 5.6 percent over 2018, with volume increasing 7.2 percent and a 0.2 percent increase from acquisitions partially offset by unfavorable currency effects of 1.8 percent. Sales in Europe were $571,596, a decrease of 8.1 percent from 2018, due to unfavorable currency effects of 4.8 percent and volume decreasing 3.8 percent partially offset by a 0.5 percent increase from acquisitions. Sales in Japan were $126,756, a decrease of 21.6 percent from 2018, with volume decreasing 22.9 percent partially offset by a 0.7 percent increase from acquisitions and favorable currency effects of 0.6 percent. Sales in the Asia Pacific region were $569,830, a decrease of 3.6 percent from 2018. The decrease was driven by unfavorable currency effects of 2.3 percent and lower volume of 1.9 percent, partially offset by a 0.6 percent increase from acquisitions.

Cost of sales were $1,002,123 in 2019, down 1.6 percent from $1,018,340 in 2018. Gross profit, expressed as a percentage of sales, decreased to 54.3 percent in 2019 from 54.8 percent in 2018. Of the 0.5 percentage point decrease in gross margin, unfavorable currency translation effects contributed 0.4 percentage points and unfavorable product mix contributed 0.1 percentage points.

Selling and administrative expenses were $708,990 in 2019, compared to $733,749 in 2018. The 3.4 percent decrease includes 1.6 percentage points due to lower base business costs and 1.8 percentage points due to unfavorable currency translation effects.

Selling and administrative expenses as a percentage of sales decreased to 32.3 percent in 2019 from 32.5 percent in 2018. The 0.2 percentage point improvement is due to lower base business costs.

Operating capacity for each of our segments can support fluctuations in order activity without significant changes in operating costs. Also, currency translation affects reported operating margins. Operating margins for each segment were unfavorably impacted by a stronger dollar primarily against the Euro and British Pound during 2019 as compared to 2018.

Operating profit as a percentage of sales decreased to 22.0 percent in 2019 compared to 22.3 percent in 2018. Of the 0.3 percentage point decline in operating margin, unfavorable leverage of our selling and administrative expenses contributed 1.2 percentage points, and unfavorable foreign currency translation effects contributed 0.4 percentage points. This decline was offset by 1.2 percentage points due to the first-year effect of acquisitions and 0.1 percentage points due to lower severance costs.

Interest expense in 2019 was $47,145, a decrease of $2,431, or 4.9 percent, from 2018. The decrease was due to lower average debt levels than the prior year. Other expense in 2019 was $6,708 compared to other expense of $5,868 in 2018. Included in the 2019 other expense were pension costs related to the adoption of a new accounting standard of $7,136. Included in the 2018 other expense were pension costs related to the adoption of a new accounting standard, as noted above, of $8,022, foreign currency gains of $1,133 and a non-recurring gain of $2,512.

Income tax expense in 2019 was $94,013, or 21.8 percent of pre-tax income, as compared to $71,144, or 15.9 percent of pre-tax income in 2018.

On December 22, 2017 the Act was enacted. It reduced the U.S. federal corporate income tax rate from 35 percent to 21 percent. We have an October 31 fiscal year end; therefore the lower corporate income tax rate was phased in, resulting in a U.S. statutory federal rate of 23.3 percent for our fiscal year ended October 31, 2018, and 21.0 percent for subsequent fiscal years. The statutory tax rate of 21.0 percent was applied to earnings in 2019.

Our income tax provision for 2018 included a provisional tax benefit of $49,082 to reflect the revaluation of our tax assets and liabilities at the reduced corporate tax rate. We also recorded a provisional tax expense of $27,618 to reflect the transition tax on previously deferred foreign earnings. The net tax effect of these discrete items resulted in a decrease of $21,464 in income tax expense for 2018, or 4.8 percent.

Subsequent to the enactment of the Act, the SEC staff issued SAB 118, which provided a measurement period of up to one year after the enactment date for companies to finalize the recognition of the income tax effects of the Act. As of January 31, 2019, our provisional accounting for the effects of the Act was complete. As a result, during 2019 and within the one year measurement period provided by SAB 118, we recorded tax expense of $4,866 to the provisional amounts recognized in 2018 due to changes in interpretations and assumptions and the finalizations of estimates.

Other provisions of the Act became effective for us in 2019. The Foreign-Derived Intangible Income provision generates a deduction against our U.S. taxable income for U.S. earnings derived offshore that utilize intangibles held in the U.S. Conversely, the Global Intangible Low-Taxed Income ("GILTI") provision requires us to subject to U.S. taxation a portion of our foreign subsidiary earnings that exceed an allowable return. We elected to treat any GILTI inclusion as a period expense in the year incurred.

Net income was $337,091, or $5.79 per diluted share, in 2019, compared to net income of $377,375, or $6.40 per diluted share, in 2018. This represented a 10.7 percent decrease in net income and a 9.5 percent decrease in diluted earnings per share.

Industrial Precision Solutions

Sales of the Industrial Precision Solutions segment were $1,208,376 in 2019, a decrease of $6,926, or 0.6 percent, from 2018 sales of $1,215,302. The decrease was the result of unfavorable currency effects that decreased sales by 2.5 percent which was partially offset by a sales volume increase of 1.9 percent. Within this segment, sales volume increased in all geographic regions with the exception of Europe. Growth in product lines serving packaging, product assembly, and polymer processing end markets as well as cold materials product lines serving automotive end markets was offset by softness in product lines serving nonwoven end markets as well as liquid and container product lines serving industrial end markets.

Operating profit as a percentage of sales increased to 27.2 percent in 2019 compared to 25.9 percent in 2018. Of the 1.3 percentage point improvement in operating margin, favorable product mix contributed 1.1 percentage points, favorable leverage of our selling and administrative expenses contributed 0.4 percentage points, and lower severance and restructuring expenses contributed 0.3 percentage points. These improvements were offset by 0.5 percentage points related to unfavorable foreign currency translation effects.

Advanced Technology Solutions

Sales of the Advanced Technology Solutions segment were $985,850 in 2019, a decrease of $53,516, or 5.1 percent, from 2018 sales of $1,039,366. The decrease was the result of a sales volume decrease of 4.6 percent and unfavorable currency effects that decreased sales by 1.4 percent partially offset by a 0.9 percent increase from the first-year effect of acquisitions. Within this segment, sales volume, inclusive of acquisitions, increased in the United States and Americas geographic regions, and was offset by softness in all other regions. Growth in our fluid management product lines serving medical end markets was offset by lower demand in our dispensing product lines serving electronics end markets.

Operating profit as a percentage of sales decreased to 20.9 percent in 2019 compared to 23.6 percent in 2018. Of the 2.7 percentage point decline in operating margin, unfavorable product mix contributed 2.8 percentage points, unfavorable foreign currency translation effects contributed 0.4 percentage points and higher severance and restructuring expenses contributed 0.1 percentage points. These declines were partially offset by 0.6 percentage points due to favorable leverage of our selling and administrative expenses.

Liquidity and Capital Resources

Cash and cash equivalents increased $57,129 in 2020. Cash provided by operating activities was $502,421 in 2020, compared to $382,893 in 2019. The primary sources were net income adjusted for non-cash income and expenses (consisting of depreciation and amortization, non-cash stock compensation, provision for losses on receivables, deferred income taxes, other non-cash expense, loss on sale of property, plant and equipment, and impairment loss on assets held for sale), which was $455,490 in 2020, compared to $466,941 in 2019. The increase in cash provided by operating activities was primarily due to working capital improvements, principally related to accounts receivable, which provided cash of $46,931 compared to $84,048 used in 2019.

Cash used in investing activities was $194,109 in 2020, compared to $76,289 in 2019. In the current year, cash of $142,414 was used for acquisitions compared to $12,486 used in the prior year. Capital expenditures were $50,535 in 2020 compared to $64,244 in 2019.

Cash used in financing activities was $251,529 in 2020, compared to $251,074 cash used in 2019. Net repayment of long-term debt and long-term borrowings used $153,816 of cash in 2020, compared to $67,838 used in 2019. In 2020, cash of $52,614 was used for the purchase of treasury shares, down from $120,510 used in 2019. Dividend payments were $88,347 in 2020, up from $82,145 in 2019 due to an increase in the annual dividend to $1.53 per share from $1.43 per share. Issuance of common shares related to employee benefit plans generated $50,853 of cash in 2020, up from $26,020 in 2019.

The following is a summary of significant changes by balance sheet caption from October 31, 2019 to October 31, 2020. Goodwill increased by $98,615 driven primarily by the Fluortek acquisition. Refer to Note 3 for an explanation of the change in goodwill due to the Fluortek acquisition. Assets held for sale increased by $19,615 due to our plan to sell our screws and barrels product line. Refer to Note 4 for further discussion. Current maturities of long-term debt decreased $130,695 primarily driven by a payment of $100,000 on our Term Loan Agreement and a $25,000 payment on notes issued under our agreement with New York Life which matured in July 2020.

In December 2014, the board of directors authorized a $300,000 common share repurchase program. In August 2015, the board of directors authorized the repurchase of up to an additional $200,000 of the Company's common shares. In August 2018, the board of directors authorized the repurchase of an additional $500,000 of the Company's common shares, bringing the aggregate total of common shares authorized for repurchase to $1,000,000. Approximately $447,104 of the total $1,000,000 authorized remained available for share repurchases at October 31, 2020. Uses for repurchased shares include the funding of benefit programs including stock options and restricted stock. Shares purchased are treated as treasury shares until used for such purposes. The repurchase program is being funded using cash from operations and proceeds from borrowings under our credit facilities.

As of October 31, 2020, approximately 63 percent of our consolidated cash and cash equivalents were held at various foreign subsidiaries. Deferred income taxes are not provided on undistributed earnings of international subsidiaries that are intended to be permanently invested in those operations. These undistributed earnings represent the post-income tax earnings under U.S. GAAP not adjusted for previously taxed income which aggregated approximately $1,045,389 and $1,101,736 at October 31, 2020 and 2019, respectively. Should these earnings be distributed, applicable foreign tax credits, distributions of previously taxed income, and utilization of other attributes would substantially offset taxes due upon the distribution. It is not practical to estimate the amount of additional taxes that might be payable on such undistributed earnings.

Contractual Obligations

The following table summarizes contractual obligations as of October 31, 2020:

	Payments Due by Period				
	Total	**Less than 1 Year**	**1-3 Years**	**4-5 Years**	**After 5 Years**
Debt (1)	$ 1,109,256	$ 38,043	$ 519,927	$ 401,286	$ 150,000
Interest payments on long-term debt (1)	88,678	19,709	34,345	19,720	14,904
Capital lease obligations (2)	17,820	6,226	6,987	1,651	2,956
Operating leases (2)	139,407	18,821	32,172	24,428	63,986
Contributions related to pension and postretirement benefits (3)	46,521	46,521	—	—	—
Purchase obligations (4)	78,620	74,767	3,853	—	—
Total obligations	$ 1,480,302	$ 204,087	$ 597,284	$ 447,085	$ 231,846

(1) In October 2020, we amended, restated and extended the term of the unsecured $200,000 private shelf facility agreement with New York Life Investment Management LLC. The facility has a three-year term and expires in October 2023. The interest rate on each borrowing is fixed based upon the market rate at the borrowing date or is variable based upon the LIBOR rate. At October 31, 2020, there was no outstanding balance under this facility.

In March 2020 we amended, restated and extended the term of our existing term loan facility with Bank of America Merrill Lynch International Limited. The interest rate is variable based on the EURIBOR rate. The Term Loan Agreement provides for the following term loans due in two tranches: €115,000 is due in March 2023 and an additional €150,000 that was drawn down in March 2020 is due in March 2023. The weighted average interest rate at October 31, 2020 was 0.71 percent.

In April 2019, we amended, restated and extended the term of our existing $605,000 term loan facility with a group of banks. The interest rate is variable based upon the LIBOR rate. At October 31, 2020, $255,000 was outstanding under this facility. The Term Loan Agreement provides for the following term loans due in two tranches: $50,000 is due in September 2022 and $205,000 is due in March 2024. The weighted average interest rate for borrowings under this agreement was 0.83 percent at October 31, 2020.

In April 2019, we entered into a $850,000 unsecured multi-currency credit facility with a group of banks, which amended, restated and extended our existing syndicated revolving credit agreement that was scheduled to expire in February 2020. This facility has a 5-year term and includes a $75,000 subfacility for swing-line loans. It expires in April 2024. At October 31, 2020, we had no balances outstanding under this facility.

In June 2018, we entered into a Note Purchase Agreement with a group of insurance companies under which we sold $350,000 of unsecured Senior Notes to the insurance companies and their affiliates. The notes mature in June 2023 through June 2030 and bear interest at fixed rates between 3.71 percent and 4.17 percent.

We entered into a $150,000 three-year Note Purchase and Private Shelf agreement with New York Life Investment Management LLC in 2011. In 2015, the amount of the facility was increased to $180,000, and in 2016 it was increased to $200,000. Senior Notes issued under the agreement can have a maturity of up to 12 years, with an average life of up to 10 years, and are unsecured. At October 31, 2020, we had no balances outstanding under this facility.

In 2012, we entered into a Note Purchase Agreement with a group of insurance companies under which we sold $200,000 of unsecured Senior Notes. At October 31, 2020, $109,900 was outstanding under this agreement. Existing notes mature between July 2021 and July 2025 and bear interest at fixed rates between 2.62 percent and 3.13 percent.

In July 2015, we entered into a Note Purchase Agreement under which $100,000 of unsecured Senior Notes were purchased primarily by a group of insurance companies. At October 31, 2020, $85,714 was outstanding under this agreement. Existing notes mature between July 2021 and July 2027 and bear interest at fixed rates of 2.89 percent and 3.19 percent.

Refer to Note 10 to the Consolidated Financial Statements for further discussion.

(2) Refer to Note 11 to the Consolidated Financial Statements for further discussion.

(3) Pension and postretirement plan funding amounts after 2021 will be determined based on the future funded status of the plans and therefore cannot be estimated at this time. Refer to Note 7 to the Consolidated Financial Statements for further discussion.

(4) Purchase obligations primarily represent commitments for materials used in our manufacturing processes that are not recorded in our Consolidated Balance Sheet.

We believe that the combination of present capital resources, cash from operations and unused financing sources are more than adequate to meet cash requirements for 2021. There are no significant restrictions limiting the transfer of funds from international subsidiaries to the parent company.

Outlook

We are optimistic about our longer-term growth opportunities in the diverse end markets we serve. We also support our customers with parts and consumables, so a significant percentage of our revenue is recurring. The combination of the Company's core strength in the direct-sales model and product innovation, combined with the new NBS Next growth framework, should deliver sustainable profitable growth. We expect the first quarter of 2021 sales growth to be approximately 2 to 3 percent as compared to the first quarter of 2020.

Our operating performance, balance sheet position, and financial ratios for 2020 remained strong, although uncertainties persist in global financial markets and the general economic environment. Going forward, we are well-positioned to manage liquidity needs that arise from working capital requirements, capital expenditures, and contributions related to pension and postretirement obligations as well as principal and interest payments on our outstanding debt. Primary sources of capital to meet these needs, as well as other opportunistic investments, are a combination of cash provided by operations and borrowings under our loan agreements. Cash from operations has been 15 to 24 percent of revenues over the past five years, which when combined with our available borrowing capacity and ready access to capital markets, is expected to be more than adequate to fund our liquidity needs over the next year. With respect to debt capacity, as of October 31, 2020, we had an unused, $850,000 multicurrency revolving credit facility. This credit facility is unsecured and expires in February 2024.

New Accounting Standards

Refer to Note 2 for further discussion of recently issued accounting standards.

Effects of Foreign Currency

The impact of changes in foreign currency exchange rates on sales and operating results cannot be precisely measured due to fluctuating selling prices, sales volume, product mix and cost structures in each country where we operate. As a general rule, a weakening of the United States dollar relative to foreign currencies has a favorable effect on sales and net income, while a strengthening of the dollar has a detrimental effect.

In 2020, as compared with 2019, the United States dollar was generally stronger against foreign currencies. If 2019 exchange rates had been in effect during 2020, sales would have been approximately $5,400 higher and third party costs would have been approximately $1,200 higher. In 2019, as compared with 2018, the United States dollar was generally stronger against foreign currencies. If 2018 exchange rates had been in effect during 2019, sales would have been approximately $45,600 higher and third-party costs would have been approximately $23,500 higher. These effects on reported sales do not include the impact of local price adjustments made in response to changes in currency exchange rates.

Inflation

Inflation affects profit margins as the ability to pass cost increases on to customers is restricted by the need for competitive pricing. Although inflation has been modest in recent years and has had no material effect on the years covered by the financial statements included in this report, we continue to seek ways to minimize the impact of inflation through focused efforts to increase productivity.

Trends

The Five-Year Summary in Part II, Item 6 of this report documents our historical financial trends. Over this period, the world's economic conditions fluctuated significantly. Our solid performance is attributed to our participation in diverse geographic and industrial markets and our long-term commitment to develop and provide quality products and worldwide service to meet our customers' changing needs.

Safe Harbor Statements Under the Private Securities Litigation Reform Act of 1995

This Form 10-K, particularly "Management's Discussion and Analysis of Financial Condition and Results of Operations," contains forward-looking statements within the meaning of the Securities Act of 1933, as amended, the Securities Exchange Act of 1934, as amended, and the Private Securities Litigation Reform Act of 1995. Such statements relate to, among other things, income, earnings, cash flows, changes in operations, operating improvements, businesses in which we operate and the United States and global economies. Statements in this 10-K that are not historical are hereby identified as "forward-looking statements" and may be indicated by words or phrases such as "anticipates," "supports," "plans," "projects," "expects," "believes," "should," "would," "could," "hope," "forecast," "management is of the opinion," use of the future tense and similar words or phrases.

In light of these risks and uncertainties, actual events and results may vary significantly from those included in or contemplated or implied by such statements. Readers are cautioned not to place undue reliance on such forward-looking statements. These forward-looking statements speak only as of the date made. We undertake no obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events or otherwise, except as required by law. Factors that could cause our actual results to differ materially from the expected results are discussed in Part 1, Item 1A, Risk Factors of this report.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

We operate internationally and enter into intercompany transactions denominated in foreign currencies. Consequently, we are subject to market risk arising from exchange rate movements between the dates foreign currencies are recorded and the dates they are settled. We regularly use foreign exchange contracts to reduce our risks related to most of these transactions. These contracts, primarily associated with the euro, yen and pound sterling, typically have maturities of 90 days or less, and generally require the exchange of foreign currencies for United States dollars at rates stated in the contracts. Gains and losses from changes in the market value of these contracts offset foreign exchange losses and gains, respectively, on the underlying transactions. Other transactions denominated in foreign currencies are designated as hedges of our net investments in foreign subsidiaries or are intercompany transactions of a long-term investment nature. We use foreign exchange contracts on a routine basis to help mitigate the risks related to transactions denominated in foreign currencies.

Refer to Note 13 to the Consolidated Financial Statements for further discussion about our foreign currency transactions and the methods and assumptions used to record these transactions.

A portion of our operations is financed with short-term and long-term borrowings and is subject to market risk arising from changes in interest rates.

The tables that follow present principal repayments and weighted-average interest rates on outstanding borrowings of fixed-rate debt.

At October 31, 2020	**2021**	**2022**	**2023**	**2024**	**2025**	**Thereafter**	**Total Value**	**Fair Value**
Annual repayments of long-term debt	**$38,043**	**$30,643**	**$130,643**	**$110,643**	**$85,643**	**$ 150,000**	**$545,615**	**$ 608,752**
Average interest rate on total borrowings outstanding during the year	**3.6 %**	**3.7 %**	**3.7 %**	**3.8 %**	**3.9 %**	**4.0 %**	**3.6 %**	

At October 31, 2019	**2020**	**2021**	**2022**	**2023**	**2024**	**Thereafter**	**Total Value**	**Fair Value**
Annual repayments of long-term debt	$ 68,738	$ 38,187	$ 30,791	$130,796	$110,801	$ 235,851	$615,164	$ 647,982
Average interest rate on total borrowings outstanding during the year	3.5 %	3.6 %	3.7 %	3.7 %	3.8 %	3.9 %	3.5 %	

We also have variable-rate notes payable and long-term debt. The weighted average interest rate of this variable-rate debt was 0.76 percent at October 31, 2020 and 3.0 percent at October 31, 2019. A one percent increase in interest rates would have resulted in additional interest expense of approximately $6,535 on the variable rate notes payable and long-term debt in 2020.

Item 8. Financial Statements and Supplementary Data

Consolidated Statements of Income

Years ended October 31, 2020, 2019 and 2018 *(In thousands except for per-share amounts)*	**2020**	**2019**	**2018**
Sales	**$ 2,121,100**	$ 2,194,226	$ 2,254,668
Operating costs and expenses:			
Cost of sales	**990,632**	1,002,123	1,018,340
Selling and administrative expenses	**693,552**	708,990	733,749
Assets held for sale impairment charge	**87,371**	—	—
	1,771,555	1,711,113	1,752,089
Operating profit	**349,545**	483,113	502,579
Other income (expense):			
Interest expense	**(32,160)**	(47,145)	(49,576)
Interest and investment income	**1,681**	1,844	1,384
Other - net	**(17,577)**	(6,708)	(5,868)
	(48,056)	(52,009)	(54,060)
Income before income taxes	**301,489**	431,104	448,519
Income tax provision:			
Current	**65,906**	95,031	105,093
Deferred	**(13,956)**	(1,018)	(33,949)
	51,950	94,013	71,144
Net income	**$ 249,539**	$ 337,091	$ 377,375
Average common shares	**57,757**	57,462	57,970
Incremental common shares attributable to outstanding stock options, restricted stock and deferred stock-based compensation	**716**	740	961
Average common shares and common share equivalents	**58,473**	58,202	58,931
Basic earnings per share	**$ 4.32**	$ 5.87	$ 6.51
Diluted earnings per share	**$ 4.27**	$ 5.79	$ 6.40
Dividends declared per common share	**$ 1.53**	$ 1.43	$ 1.25

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

Consolidated Statements of Comprehensive Income

Years ended October 31, 2020, 2019 and 2018

(In thousands)	2020	2019	2018
Net income	**$ 249,539**	$ 337,091	$ 377,375
Components of other comprehensive income (loss), net of tax:			
Foreign currency translation adjustments	**12,910**	3,710	(28,619)
Pension and postretirement benefit plans:			
Prior service (cost) credit arising during the year	**(6)**	(148)	(45)
Net actuarial loss arising during the year	**(21,607)**	(63,138)	(7,783)
Amortization of prior service cost	**(232)**	(322)	(322)
Amortization of actuarial loss	**12,767**	6,946	10,536
Settlement loss recognized	**1,931**	385	200
Total pension and postretirement benefit plans	**(7,147)**	(56,277)	2,586
Total other comprehensive income (loss)	**5,763**	(52,567)	(26,033)
Reclassification due to adoption of ASU 2018-02	—	—	(18,846)
Total comprehensive income	**$ 255,302**	$ 284,524	$ 332,496

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

Consolidated Balance Sheets

October 31, 2020 and 2019

(In thousands)

	2020	2019
Assets		
Current assets:		
Cash and cash equivalents	**$ 208,293**	$ 151,164
Receivables - net	**471,873**	530,765
Inventories - net	**277,033**	283,399
Prepaid expenses and other current assets	**43,798**	45,867
Assets held for sale	**19,615**	—
Total current assets	**1,020,612**	1,011,195
Property, plant and equipment - net	**358,618**	398,895
Operating right of use lease assets	**122,125**	—
Goodwill	**1,713,354**	1,614,739
Intangible assets - net	**407,586**	445,575
Deferred income taxes	**9,831**	11,261
Other assets	**42,530**	34,782
	$ 3,674,656	$ 3,516,447
Liabilities and shareholders' equity		
Current liabilities:		
Accounts payable	**$ 70,949**	$ 85,139
Income taxes payable	**7,841**	15,601
Accrued liabilities	**167,883**	161,655
Customer advance payments	**42,323**	41,131
Current maturities of long - term debt	**38,043**	168,738
Operating lease liability - current	**16,918**	—
Finance lease liability	**5,984**	5,362
Liabilities held for sale	**13,148**	—
Total current liabilities	**363,089**	477,626
Long-term debt	**1,067,952**	1,075,404
Operating lease liability - noncurrent	**109,317**	—
Finance lease liability - noncurrent	**10,470**	9,513
Pension obligations	**165,529**	158,506
Postretirement obligations	**85,249**	86,368
Deferred income taxes	**66,995**	83,564
Other long-term liabilities	**47,064**	44,421
Shareholders' equity:		
Preferred shares, no par value; 10,000 shares authorized; none issued	**—**	—
Common shares, no par value; 160,000 shares authorized; 98,023 shares issued at October 31, 2020 and 2019	**12,253**	12,253
Capital in excess of stated value	**534,684**	483,116
Retained earnings	**2,908,738**	2,747,650
Accumulated other comprehensive loss	**(226,118)**	(231,881)
Common shares in treasury, at cost	**(1,470,566)**	(1,430,093)
Total shareholders' equity	**1,758,991**	1,581,045
	$ 3,674,656	$ 3,516,447

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

Consolidated Statements of Shareholders' Equity

Years ended October 31, 2020, 2019 and 2018

(In thousands, except for per share data)

	Common Shares	Additional Paid-in-Capital	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Common Shares in Treasury, at cost	TOTAL
October 31, 2017	**$ 12,253**	**$ 412,785**	**$ 2,164,597**	**$ (134,435)**	**$(1,299,707)**	**$ 1,155,493**
Shares issued under company stock and employee benefit plans	—	12,220	—	—	6,591	**18,811**
Stock-based compensation	—	21,550	—	—	—	**21,550**
Purchase of treasury shares (180,735 shares)	—	—	—	—	(24,012)	**(24,012)**
Dividends declared ($1.25 per share)	—	—	(72,443)	—	—	**(72,443)**
Net income	—	—	377,375	—	—	**377,375**
Reclassification due to adoption of ASU 2018-02	—	—	18,846	(18,846)	—	—
Other comprehensive income (loss):						
Foreign currency translation adjustments	—	—	—	(28,619)	—	**(28,619)**
Defined benefit pension and post-retirement plans adjustment	—	—	—	2,586	—	**2,586**
October 31, 2018	**$ 12,253**	**$ 446,555**	**$ 2,488,375**	**$ (179,314)**	**$(1,317,128)**	**$ 1,450,741**
Shares issued under company stock and employee benefit plans	—	18,475	—	—	7,545	**26,020**
Stock-based compensation	—	18,086	—	—	—	**18,086**
Purchase of treasury shares (998,004 shares)	—	—	—	—	(120,510)	**(120,510)**
Dividends declared ($1.43 per share)	—	—	(82,145)	—	—	**(82,145)**
Net income	—	—	337,091	—	—	**337,091**
Impact of adoption of ASU 2014-09	—	—	4,329	—	—	**4,329**
Other comprehensive income (loss):						
Foreign currency translation adjustments	—	—	—	3,710	—	**3,710**
Defined benefit pension and post-retirement plans adjustment	—	—	—	(56,277)	—	**(56,277)**
October 31, 2019	**$ 12,253**	**$ 483,116**	**$ 2,747,650**	**$ (231,881)**	**$(1,430,093)**	**$ 1,581,045**
Shares issued under company stock and employee benefit plans	—	38,712	—	—	12,141	**50,853**
Stock-based compensation	—	12,856	—	—	—	**12,856**
Purchase of treasury shares (384,498 shares)	—	—	—	—	(52,614)	**(52,614)**
Dividends declared ($1.53 per share)	—	—	(88,347)	—	—	**(88,347)**
Net income	—	—	249,539	—	—	**249,539**
Impact of adoption of ASU 2016-02	—	—	(104)	—	—	**(104)**
Other comprehensive income (loss):						
Foreign currency translation adjustments	—	—	—	12,910	—	**12,910**
Defined benefit pension and post-retirement plans adjustment	—	—	—	(7,147)	—	**(7,147)**
October 31, 2020	**$ 12,253**	**$ 534,684**	**$ 2,908,738**	**$ (226,118)**	**$(1,470,566)**	**$ 1,758,991**

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

Consolidated Statements of Cash Flows

Years ended October 31, 2020, 2019 and 2018

(In thousands)

Cash flows from operating activities:	**2020**	**2019**	**2018**
Net income	**$ 249,539**	$ 337,091	$ 377,375
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation	**56,323**	55,454	52,959
Amortization	**56,979**	54,790	55,448
Provision for losses on receivables	**2,165**	2,254	1,185
Deferred income taxes	**(13,956)**	(1,018)	(33,949)
Non-cash stock compensation	**12,856**	18,086	21,550
Loss on sale of property, plant and equipment	**484**	953	830
Impairment loss on assets held for sale	**87,371**	—	—
Other non-cash	**3,729**	(669)	1,359
Changes in operating assets and liabilities:			
Receivables	**50,098**	(39,992)	10,236
Inventories	**5,785**	(23,117)	5,532
Prepaid expenses	**1,978**	(2,024)	(4,046)
Accounts payable	**(10,673)**	654	(2,671)
Income taxes payable	**(7,816)**	(3,832)	(2,718)
Accrued liabilities	**6,360**	(14,027)	2,134
Customer advance payments	**(619)**	2,193	5,047
Other net	**1,818**	(3,903)	14,367
Net cash provided by operating activities	**502,421**	382,893	504,638
Cash flows from investing activities:			
Additions to property, plant and equipment	**(50,535)**	(64,244)	(89,790)
Proceeds from sale of property, plant and equipment	**840**	1,285	458
Acquisition of businesses, net of cash acquired	**(142,414)**	(12,486)	(50,586)
Other	**(2,000)**	(844)	—
Net cash used in investing activities	**(194,109)**	(76,289)	(139,918)
Cash flows from financing activities:			
Proceeds from short-term borrowings	—	—	996
Repayment of short-term borrowings	—	—	(1,006)
Proceeds from long-term debt	**165,734**	186,635	585,661
Repayment of long-term debt	**(319,550)**	(254,473)	(854,538)
Repayment of capital lease obligations	**(7,605)**	(4,859)	(5,333)
Payment of debt issuance costs	—	(1,742)	(1,826)
Issuance of common shares	**50,853**	26,020	18,811
Purchase of treasury shares	**(52,614)**	(120,510)	(24,012)
Dividends paid	**(88,347)**	(82,145)	(72,443)
Net cash used in financing activities	**(251,529)**	(251,074)	(353,690)
Effect of exchange rate changes on cash	**346**	(44)	(5,735)
Increase in cash and cash equivalents	**57,129**	55,486	5,295
Cash and cash equivalents at beginning of year	**151,164**	95,678	90,383
Cash and cash equivalents at end of year	**$ 208,293**	$ 151,164	$ 95,678

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

Notes to Consolidated Financial Statements

NOTE REGARDING AMOUNTS AND FISCAL YEAR REFERENCES

In this annual report, all amounts related to United States dollars and foreign currency and to the number of Nordson Corporation's common shares, except for per share earnings and dividend amounts, are expressed in thousands. Unless the context otherwise indicates, all references to "we" or the "Company" mean Nordson Corporation.

Unless otherwise noted, all references to years relate to our fiscal year.

Note 1 — Significant accounting policies

Consolidation — The consolidated financial statements include the accounts of Nordson Corporation and its majority-owned and controlled subsidiaries. Investments in affiliates and joint ventures in which our ownership is 50 percent or less or in which we do not have control but have the ability to exercise significant influence, are accounted for under the equity method. All significant intercompany accounts and transactions have been eliminated in consolidation.

Use of estimates — The preparation of financial statements in conformity with generally accepted accounting principles in the United States requires management to make estimates and assumptions that affect the amounts reported in the Consolidated Financial Statements and notes. Actual amounts could differ from these estimates.

Fiscal year — Our fiscal year is November 1 through October 31.

Revenue recognition — A contract exists when it has approval and commitment from both parties, the rights of the parties are identified, payment terms are identified, the contract has commercial substance and collectability of the consideration is probable. Revenue is recognized when performance obligations under the terms of the contract with a customer are satisfied. Generally, our revenue results from short-term, fixed-price contracts and primarily is recognized as of a point in time when the product is shipped or at a later point when the control of the product transfers to the customer. Revenue for undelivered items is deferred and included within Accrued liabilities in our Consolidated Balance Sheets. Revenues deferred as of October 31, 2020 and 2019 were not material.

However, for certain contracts related to the sale of customer-specific products within our Advanced Technology Solutions segment, there was a change in revenue recognition upon adoption of the new revenue standard. Previously, these contracts were recognized at the point in time when the shipping terms were satisfied. Under the new revenue standard, we now recognize revenue for these contracts over time as we satisfy performance obligations because of the continuous transfer of control to the customer. The continuous transfer of control to the customer occurs as we enhance assets that are customer controlled and we are contractually entitled to payment for work performed to date plus a reasonable margin.

As control transfers over time for these products or services, revenue is recognized based on progress toward completion of the performance obligations. The selection method to measure progress towards completion requires judgment and is based on the nature of the products or services to be provided. We have elected to use the input method – costs incurred for these contracts because it best depicts the transfer of products or services to the customer based on incurring costs on the contract. Under this method, revenues are recorded proportionally as costs are incurred. Contract assets recognized are recorded in Prepaid expenses and other current assets and contract liabilities are recorded in Accrued liabilities in our Consolidated Balance Sheets and were not material at October 31, 2020 or 2019. Revenue recognized over time is not material to our overall Consolidated Financial Statements.

Revenue is measured as the amount of consideration we expect to receive in exchange for transferring products or services. Sales, value add, and other taxes we collect concurrently with revenue-producing activities are excluded from revenue. As a practical expedient, we may exclude the assessment of whether goods or services are performance obligations, if they are immaterial in the context of the contract, and combine these with other performance obligations. While payment terms and conditions vary by contract type, we have determined that our contracts generally do not include a significant financing component. We have elected to apply the practical expedient to treat all shipping and handling costs as fulfillment costs as a significant portion of these costs are incurred prior to transfer of control to the customer. We have also elected to apply the practical expedient to expense sales commissions as they are incurred as the amortization period resulting from capitalizing the costs is one year or less. These costs are recorded within Selling, general and administrative expenses in our Consolidated Statements of Income.

We offer assurance type warranties on our products as well as separately sold warranty contracts. Revenue related to warranty contracts that are sold separately is recognized over the life of the warranty term. Certain arrangements may include installation, installation supervision, training, and spare parts, which tend to be completed in a short period of time, at an insignificant cost, and utilizing skills not unique to us, therefore, are typically regarded as inconsequential or not material.

We disclose disaggregated revenues by operating segment and geography in accordance with the revenue standard and on the same basis used internally by the chief operating decision maker for evaluating performance of operating segments and for allocating resources. Refer to Note 16 for details on our operating segments.

Shipping and handling costs — Amounts billed to customers for shipping and handling are recorded as revenue. Shipping and handling expenses are included in cost of sales.

Advertising costs — Advertising costs are expensed as incurred and were $7,174, $10,479 and $12,451 in 2020, 2019 and 2018, respectively.

Research and development — Investments in research and development are important to our long-term growth, enabling us to keep pace with changing customer and marketplace needs through the development of new products and new applications for existing products. We place strong emphasis on technology developments and improvements through internal engineering and research teams. Research and development costs are expensed as incurred and were $63,591, $60,018 and $58,806 in 2020, 2019 and 2018, respectively. As a percentage of sales, research and development expenses were 3.0, 2.7 and 2.6 percent in 2020, 2019 and 2018, respectively.

Earnings per share — Basic earnings per share are computed based on the weighted-average number of common shares outstanding during each year, while diluted earnings per share are based on the weighted-average number of common shares and common share equivalents outstanding. Common share equivalents consist of shares issuable upon exercise of stock options computed using the treasury stock method, as well as restricted stock and deferred stock-based compensation. Options whose exercise price is higher than the average market price are excluded from the calculation of diluted earnings per share because the effect would be anti-dilutive. Options for 95 common shares were excluded from the diluted earnings per share calculation in 2020 and 176 options were excluded from the calculation of diluted earnings per share in 2019 because their effect would have been anti-dilutive. No options were excluded from the calculation of diluted earnings per share in 2018. Under the Amended and Restated 2012 Stock Incentive and Award Plan, executive officers and selected other key employees receive common share awards based on corporate performance measures over three-year performance periods. Awards for which performance measures have not been met were excluded from the calculation of diluted earnings per share.

Cash — Highly liquid instruments with maturities of 90 days or less at date of purchase are considered to be cash equivalents.

Allowance for doubtful accounts — An allowance for doubtful accounts is maintained for estimated losses resulting from the inability of customers to make required payments. The amount of the allowance is determined principally on the basis of past collection experience and known factors regarding specific customers. Accounts are written off against the allowance when it becomes evident that collection will not occur. Credit is extended to customers satisfying pre-defined credit criteria. We believe we have limited concentration of credit risk due to the diversity of our customer base.

Inventories — Inventories are valued at the lower of cost or net realizable value. Cost was determined using the last-in, first-out (LIFO) method for 19 percent of consolidated inventories at October 31, 2020 and 19 percent of consolidated inventories at October 31, 2019. The first-in, first-out (FIFO) method is used for all other inventories. Consolidated inventories would have been $4,545 and $6,145 higher than reported at October 31, 2020 and 2019, respectively, had the FIFO method, which approximates current cost, been used for valuation of all inventories.

Property, plant and equipment and depreciation — Property, plant and equipment are carried at cost. Additions and improvements that extend the lives of assets are capitalized, while expenditures for repairs and maintenance are expensed as incurred. Plant and equipment are depreciated for financial reporting purposes using the straight-line method over the estimated useful lives of the assets or, in the case of property under finance leases, over the terms of the leases. Leasehold improvements are depreciated over the shorter of the lease term or their useful lives. Useful lives are as follows:

Land improvements	15-25 years
Buildings	20-40 years
Machinery and equipment	3-18 years
Enterprise management systems	5-13 years

Depreciation expense is included in cost of sales and selling and administrative expenses. Internal use software costs are expensed or capitalized depending on whether they are incurred in the preliminary project stage, application development stage or the post-implementation stage. Amounts capitalized are amortized over the estimated useful lives of the software beginning with the project's completion. All re-engineering costs are expensed as incurred. Interest costs on significant capital projects are capitalized. No interest was capitalized in 2020, 2019 or 2018.

Goodwill and intangible assets — Goodwill is the excess of cost of an acquired entity over the amounts assigned to assets acquired and liabilities assumed in a business combination. Goodwill relates to and is assigned directly to specific reporting units. Goodwill is not amortized but is subject to annual impairment testing. Our annual impairment testing is performed as of August 1. Testing is done more frequently if an event occurs or circumstances change that would indicate the fair value of a reporting unit is less than the carrying amount of those assets.

Other amortizable intangible assets, which consist primarily of patent/technology costs, customer relationships, noncompete agreements, and trade names, are amortized over their useful lives on a straight-line basis. At October 31, 2020, the weighted-average useful lives for each major category of amortizable intangible assets were:

Patent/technology costs	12 years
Customer relationships	14 years
Noncompete agreements	4 years
Trade names	15 years

Foreign currency translation — The financial statements of subsidiaries outside the United States are generally measured using the local currency as the functional currency. Assets and liabilities of these subsidiaries are translated at the rates of exchange at the balance sheet dates. Income and expense items are translated at average monthly rates of exchange. The resulting translation adjustments are included in accumulated other comprehensive income (loss), a separate component of shareholders' equity. Generally, gains and losses from foreign currency transactions, including forward contracts, of these subsidiaries and the United States parent are included in net income. Gains and losses from intercompany foreign currency transactions of a long-term investment nature are included in accumulated other comprehensive income (loss).

Accumulated other comprehensive loss — Accumulated other comprehensive loss at October 31, 2020 and 2019 consisted of:

	Cumulative translation adjustments	Pension and postretirement benefit plan adjustments	Accumulated other comprehensive loss
Balance at October 31, 2019	$ (53,332)	$ (178,549)	$ (231,881)
Pension and postretirement plan changes, net of tax of $(2,404)	—	(7,147)	(7,147)
Currency translation losses	12,910	—	12,910
Balance at October 31, 2020	$ (40,422)	$ (185,696)	$ (226,118)

Warranties — We offer warranties to our customers depending on the specific product and terms of the customer purchase agreement. A typical warranty program requires that we repair or replace defective products within a specified time period (generally one year) measured from the date of delivery or first use. We record an estimate for future warranty-related costs based on actual historical return rates. Based on analysis of return rates and other factors, the adequacy of our warranty provisions is adjusted as necessary. The liability for warranty costs is included in accrued liabilities in the Consolidated Balance Sheet.

Following is a reconciliation of the product warranty liability for 2020 and 2019:

	2020	2019
Balance at beginning of year	**$ 11,006**	$ 12,195
Accruals for warranties	**11,662**	9,670
Warranty payments	**(12,330)**	(10,881)
Currency adjustments	**212**	22
Balance at end of year	**$ 10,550**	$ 11,006

Note 2 — Recently issued accounting standards

New accounting guidance adopted:

On November 1, 2019, we adopted Accounting Standards Update (ASU) 2016-02, Accounting Standards Codification (ASC) 842, "Leases." This standard requires a lessee to recognize on the balance sheet the assets and liabilities for the rights and obligations created by those leases with a lease term of more than 12 months. We elected to use the transition option, which allows entities to initially apply the new standard at the adoption date and recognize a cumulative effect adjustment to the opening balance of retained earnings in the period of adoption without restating prior periods. We elected the practical expedient package related to the identification of leases in contracts, lease classification, and accounting for initial direct costs whereby prior conclusions do not have to be reassessed for leases that commenced before the effective date. As we have not reassessed such conclusions, we did not adopt the practical expedient to use hindsight to determine the likelihood of whether a lease will be extended or terminated, to separate non-lease components within our lease portfolios, or whether a purchase option will be exercised. There was not a material cumulative-effect adjustment to our beginning retained earnings for the adoption of this standard. Upon adoption, we recognized operating right-of-use assets and lease liabilities in our Consolidated Balance Sheet of $130,538 and $134,853 as of November 1, 2019, respectively, and operating right-of-use assets and lease liabilities were $122,125 and $126,235 as of October 31, 2020, respectively. Adoption of the new standard did not have a material impact on our Consolidated Statements of Income and Cash Flows. Refer to Note 11 for further discussion of leases.

In June 2016, the Financial Accounting Standards Board (FASB) issued ASU 2016-13, "Financial Instruments – Credit Losses (Topic 326)," which changes the impairment model for most financial instruments. Prior guidance required the recognition of credit losses based on an incurred loss impairment methodology that reflects losses once the losses are probable. The new standard requires the use of a current expected credit loss model to immediately recognize an estimate of credit losses that are expected to occur over the life of the financial instruments that are in the scope of this update, including trade receivables. The standard does not prescribe a specific method to make an estimate, so the application requires judgment and should consider historical information, current information, and reasonable and supportable forecasts, and includes estimates of prepayment. We adopted the new standard on November 1, 2020 with no material impact to the Consolidated Financial Statements.

In August 2018, the FASB issued ASU 2018-15, "Intangibles – Goodwill and Other Internal-Use Software (Subtopic 350-40)," a new standard which makes a number of changes meant to help entities evaluate the accounting for fees paid by a customer in a cloud computing arrangement (hosting arrangement), by providing guidance in determining when the arrangement includes a software license. We adopted the new standard on November 1, 2020 with no material impact to the Consolidated Financial Statements.

In August 2018, the FASB issued a new standard which removes, modifies, and adds certain disclosure requirements on fair value measurements. The guidance removes disclosure requirements pertaining to the amount of and reasons for transfers between Level 1 and Level 2 of the fair value hierarchy, the policy for timing of transfers between levels, and the valuation processes for Level 3 fair value measurements. For investments in certain entities that calculate net asset value, an entity is required to disclose the timing of liquidation of an investee's assets and the date when restrictions from redemption might lapse only if the investee has communicated the timing to the entity or announced the timing publicly. In addition, the amendment clarifies that the measurement uncertainty disclosure is to communicate information about the uncertainty in measurement as of the reporting date. The guidance adds disclosure requirements for changes in unrealized gains and losses for the period included in other comprehensive income for recurring Level 3 fair value measurements held at the end of the reporting period as well as the range and weighted average of significant unobservable inputs used to develop Level 3 fair value measurements. We adopted the new standard on November 1, 2020 with no material impact to the Consolidated Financial Statements.

New accounting guidance issued and not yet adopted:

In August 2018, the FASB issued a new standard which addresses defined benefit plans. The amendments modify the following disclosure requirements for employers that sponsor defined benefit pension or other postretirement plans: the amounts in accumulated other comprehensive income expected to be recognized as components of net period benefit cost over the next fiscal year, amount and timing of plan assets expected to be returned to the employer, related party disclosure about the amount of future annual benefits covered by insurance and annuity contracts and significant transactions between the employer or related parties and the plan, and the effects of a 1.00 percent point change in assumed health care cost trend rates on the (a) aggregate of the service and interest cost components of net periodic benefit costs and (b) benefit obligations for postretirement health care benefits are removed. A disclosure requirement was added for the explanation of the reasons for significant gains and losses related to changes in the benefit obligation for the period. Additionally, the standard clarifies disclosure requirements surrounding the projected benefit obligation (PBO) and fair value of plan assets for plans with PBOs in excess of plan assets and the accumulated benefit obligation (ABO) and fair value of plan assets for plans with ABOs in excess of plan assets. The standard will be effective for us beginning November 1, 2021. Early adoption is permitted. We are currently assessing the impact this standard will have on our Consolidated Financial Statements.

In December 2019, the FASB issued ASU 2019-12, "Income Taxes (ASC 740) – Simplifying the Accounting for Income Taxes," which simplifies the accounting for income taxes by removing certain exceptions to the general principles in ASC 740. The amendments also improve consistent application of and simplify U.S. GAAP for other areas of ASC 740 by clarifying and amending existing guidance. The standard will be effective for us beginning November 1, 2021. Early adoption is permitted, including adoption in any interim period for which financial statements have not yet been issued. Depending on the amendment, adoption may be applied on the retrospective, modified retrospective or prospective basis. We are currently assessing the impact of this standard on our Consolidated Financial Statements.

Note 3 — Acquisitions

Business acquisitions have been accounted for using the acquisition method, with the acquired assets and liabilities recorded at estimated fair value on the dates of acquisition. The cost in excess of the net assets of the business acquired is included in goodwill. Operating results since the respective dates of acquisitions are included in the Consolidated Statement of Income.

2020 acquisitions

On September 1, 2020, we acquired 100 percent of the outstanding shares of vivaMOS Ltd. ("vivaMOS"), a developer and fabricator of high-end large-area complementary metal–oxide–semiconductor (CMOS) image sensors for a wide range of X-ray applications. We acquired vivaMOS for an aggregate purchase price of $17,154 net of cash and other closing adjustments of approximately $158, utilizing cash on hand. Based on the fair value of the assets acquired and the liabilities assumed, goodwill of $14,394 and identifiable intangible assets of $4,040 were recorded. The identifiable intangible assets consist primarily of $3,900 of technology (amortized over 10 years) and $140 of non-compete agreements (amortized over 3 years). Goodwill associated with this acquisition is not tax deductible. This acquisition is being reported in our Advanced Technology Solutions segment and the results of vivaMOS are not material to our Consolidated Financial Statements. As of October 31, 2020, the purchase price allocation remains preliminary as we complete our assessments of intangible assets and income taxes.

On June 1, 2020, we acquired 100 percent of the outstanding shares of Fluortek, Inc. ("Fluortek"), a precision plastic extrusion manufacturer that provides custom dimensioned tubing to the medical device industry. We acquired Fluortek for an aggregate purchase price of $125,260, net of cash and other closing adjustments of approximately $515, utilizing cash on hand. Based on the fair value of the assets acquired and the liabilities assumed, property, plant and equipment and working capital – net of $19,843, goodwill of $76,047 and identifiable intangible assets of $29,370 were recorded. The identifiable intangible assets consist primarily of $19,700 of customer relationships (amortized over 12 years), $7,400 of technology (amortized over 10 years), $1,500 of tradenames (amortized over 10 years), and $770 of non-compete agreements (amortized over 5 years). Goodwill associated with this acquisition is tax deductible. This acquisition is being reported in our Advanced Technology Solutions segment and the results for Fluortek are not material to the our Consolidated Financial Statements. As of October 31, 2020, the purchase price allocation remains preliminary as we complete our assessment of income taxes.

2019 acquisition

On July 1, 2019, we purchased certain assets of Optical Control GmbH & Co. KG ("Optical"), a Nuremberg, Germany designer and developer of high speed, fully automatic counting systems utilizing x-ray technology. This transaction was not material to our Consolidated Financial Statements. We recorded the acquisition of Optical based on the fair value of the assets acquired and the liabilities assumed. Goodwill associated with this acquisition is tax deductible. This acquisition is being reported in our Advanced Technology Solutions segment.

2018 acquisitions

On October 17, 2018, we purchased 100 percent of the outstanding shares of Cladach Nua Teoranta ("Clada"), a Galway, Ireland designer and developer primarily focused on medical balloons and balloon catheters. Clada's technologies are used in key applications such as angioplasty and the treatment of vascular disease. We acquired Clada for an aggregate purchase price of $5,236 which included an earn-out liability of $1,131. Based on the fair value of the assets acquired and the liabilities assumed, goodwill of $3,776 and identifiable intangible assets of $697 were recorded. Goodwill associated with this acquisition is not tax deductible. This acquisition is being reported in our Advanced Technology Solutions segment.

On January 2, 2018, we purchased 100 percent of the outstanding shares of Sonoscan, Inc. ("Sonoscan"), an Elk Grove Village, Illinois leading designer and manufacturer of acoustic microscopes and sophisticated acoustic micro imaging systems used in a variety of microelectronic, automotive, aerospace and industrial electronic assembly applications. We acquired Sonoscan for an aggregate purchase price of $46,018, net of $655 of cash. Based on the fair value of the assets acquired and the liabilities assumed, goodwill of $22,775 and identifiable intangible assets of $7,910 were recorded. Goodwill associated with this acquisition is tax deductible. This acquisition is being reported in our Advanced Technology Solutions segment.

Note 4 — Assets Held for Sale

In the fourth quarter of 2020, we committed to a plan to sell our screws and barrels product line within the Adhesives reporting unit under our Industrial Precision Solutions operating segment and determined that it met the criteria to be classified as held for sale. Therefore, these assets and liabilities have been presented as held for sale in the Consolidated Balance Sheet as of October 31, 2020. Assets and liabilities classified as held for sale are measured at the lower of carrying value or fair value less costs to sell. We entered into a letter of intent to sell the screws and barrels product line in October 2020. In December 2020, we entered into a definitive agreement with the buyer.

Before measuring the fair value less costs to sell of the disposal group as a whole, we first reviewed individual assets and liabilities to determine if any fair value adjustments were required and concluded no individual asset impairments were required. Then, based on the definitive agreement entered into by us and the buyer, we determined the fair value of the disposal group to be equal to the selling price, less costs to sell. Based on this review, we recorded a non-cash, assets held for sale impairment charge of $87,371.

The assets and liabilities of the screws and barrels product line classified as held for sale at October 31, 2020 were as follows:

	2020
Receivables - net	$ 14,327
Inventories - net	9,854
Prepaid expenses and other current assets	696
Property, plant and equipment - net	58,950
Other assets	23,159
Impairment on carrying value	(87,371)
Assets held for sale	$ 19,615
Accounts payable	$ 4,625
Accrued liabilities	3,352
Other liabilities	5,171
Liabilities held for sale	$ 13,148

The pending transaction is subject to customary closing conditions and is expected to close no later than the third quarter of 2021.

Excluding the non-cash, assets held for sale impairment charge of $87,371 recorded in the fourth quarter of 2020, the operating results of the screws and barrels product line were not material to our Consolidated Financial Statements for any period presented.

Note 5 — Details of Consolidated Balance Sheet	**2020**	**2019**
Receivables:		
Accounts	$ **445,360**	$ 506,318
Notes	**4,592**	3,980
Other	**30,966**	30,268
	480,918	540,566
Allowance for doubtful accounts	**(9,045)**	(9,801)
	$ **471,873**	$ 530,765
Inventories:		
Raw materials and component parts	$ **94,630**	$ 102,044
Work-in-process	**44,403**	42,904
Finished goods	**183,860**	183,973
	322,893	328,921
Obsolescence and other reserves	**(41,315)**	(39,377)
LIFO reserve	**(4,545)**	(6,145)
	$ **277,033**	$ 283,399
Property, plant and equipment:		
Land	$ **8,816**	$ 10,468
Land improvements	**4,611**	4,390
Buildings	**253,621**	256,195
Machinery and equipment	**464,171**	489,864
Enterprise management system	**56,103**	53,020
Construction-in-progress	**29,897**	34,944
Leased property under capitalized leases	**32,590**	29,528
	849,809	878,409
Accumulated depreciation and amortization	**(491,191)**	(479,514)
	$ **358,618**	$ 398,895
Accrued liabilities:		
Salaries and other compensation	$ **52,260**	$ 57,773
Pension and retirement	**10,282**	9,993
Taxes other than income taxes	**13,346**	8,606
Customer commissions	**9,158**	9,030
Other	**82,837**	76,253
	$ **167,883**	$ 161,655

Note 6 — Goodwill and intangible assets

We account for goodwill and other intangible assets in accordance with the provisions of ASC 350 and account for business combinations using the acquisition method of accounting and accordingly, the assets and liabilities of the entities acquired are recorded at their estimated fair values at the acquisition date. Goodwill is the excess of purchase price over the fair value of tangible and identifiable intangible net assets acquired in various business combinations. Goodwill is not amortized but is subject to annual impairment testing. Our annual impairment testing is performed as of August 1. Testing is done more frequently if an event occurs or circumstances change that would indicate the fair value of a reporting unit is less than the carrying amount of those assets. We assess the fair value of reporting units on a non-recurring basis using a quantitative analysis that uses a combination of the discounted cash flow method of the Income Approach and the guideline public company method of the Market Approach, and compare the result against the reporting unit's carrying value of net assets. The implied fair value of our reporting units is determined based on significant unobservable inputs, as discussed below; accordingly, these inputs fall within Level 3 of the fair value hierarchy. The discounted cash flow method (Income Approach) uses assumptions for revenue growth, operating margin, and working capital turnover that are based on management's strategic plans tempered by performance trends and reasonable expectations about those trends. Terminal value calculations employ a published formula known as the Gordon Growth Model Method that essentially captures the present value of perpetual cash flows beyond the last projected period assuming a constant Weighted Average Cost of Capital (WACC) methodology and growth rate. For each reporting unit, a sensitivity analysis is performed to vary the discount and terminal growth rates in order to provide a range of reasonableness for detecting impairment. Discount rates are developed using a WACC methodology. The WACC represents the blended average required rate of return for equity and debt capital based on observed market return data and company specific risk factors.

In the application of the guideline public company method (Market Approach), fair value is determined using transactional evidence for similar publicly traded equity. The comparable company guideline group is determined based on relative similarities to each reporting unit since exact correlations are not available. An indication of fair value for each reporting unit is based on the placement of each reporting unit within a range of multiples determined for its comparable guideline company group. Valuation multiples are derived by dividing latest twelve-month performance for revenues and Earnings Before Interest, Taxes, Depreciation and Amortization (EBITDA) into total invested capital, which is the sum of traded equity plus interest bearing debt less cash. These multiples are applied against the revenue and EBITDA of each reporting unit. While the implied indications of fair value using the guideline public company method yield meaningful results, the discounted cash flow method of the income approach includes management's thoughtful projections and insights as to what the reporting units will accomplish in the near future. Accordingly, the reasonable, implied fair value of each reporting unit is a blend based on the consideration of both the Income and Market approaches.

An impairment charge is recorded for the amount by which the carrying value of the reporting unit exceeds the fair value of the reporting unit, as calculated in the quantitative analysis described above. Based on our annual impairment tests in 2020, 2019 and 2018, the fair value of each reporting unit exceeded its carrying value, and accordingly we did not record any goodwill impairment charges in 2020, 2019 or 2018.

Our reporting units include components of the Industrial Precision Solutions and the Advanced Technology Solutions segments.

Changes in the carrying amount of goodwill during 2020 by operating segment:

	Industrial Precision Solutions	Advanced Technology Solutions	Total
Balance at October 31, 2019	**$ 411,461**	**$ 1,203,278**	**$ 1,614,739**
Acquisitions	**—**	**90,441**	**90,441**
Other	**(453)**		**(453)**
Currency effect	**4,854**	**3,773**	**8,627**
Balance at October 31, 2020	**$ 415,862**	**$ 1,297,492**	**$ 1,713,354**

The Other activity above reflects an allocation of goodwill to the disposal group classified as held for sale. See Note 4, Assets Held for Sale.

Changes in the carrying amount of goodwill during 2019 by operating segment:

	Industrial Precision Solutions	Advanced Technology Solutions	Total
Balance at October 31, 2018	$ 413,049	$ 1,194,969	$ 1,608,018
Acquisition	—	9,225	9,225
Currency effect	(1,588)	(916)	(2,504)
Balance at October 31, 2019	$ 411,461	$ 1,203,278	$ 1,614,739

Accumulated impairment losses, which were recorded in 2009, were $232,789 at October 31, 2020 and October 31, 2019. Of these losses, $229,173 related to the Advanced Technology Solutions segment and $3,616 related to the Industrial Precision Solutions segment.

Information regarding intangible assets subject to amortization:

	October 31, 2020		
	Carrying Amount	Accumulated Amortization	Net Book Value
Customer relationships	**$ 483,568**	**$ 193,617**	**$ 289,951**
Patent/technology costs	**153,555**	**76,934**	**76,621**
Trade name	**74,240**	**34,693**	**39,547**
Noncompete agreements	**9,908**	**8,444**	**1,464**
Other	**1,403**	**1,400**	**3**
Total	**$ 722,674**	**$ 315,088**	**$ 407,586**

	October 31, 2019		
	Carrying Amount	Accumulated Amortization	Net Book Value
Customer relationships	$ 480,007	$ 173,996	$ 306,011
Patent/technology costs	154,735	71,663	83,072
Trade name	96,655	41,303	55,352
Noncompete agreements	11,540	10,406	1,134
Other	1,400	1,394	6
Total	$ 744,337	$ 298,762	$ 445,575

Amortization expense for 2020, 2019 and 2018 was $56,979, $54,790 and $55,448 respectively.

Estimated amortization expense for each of the five succeeding years:

Year	Amounts
2021	$ 50,576
2022	$ 46,685
2023	$ 45,697
2024	$ 40,815
2025	$ 39,115

Note 7 — Retirement, pension and other postretirement plans

Retirement plans — We have funded contributory retirement plans covering certain employees. Our contributions are primarily determined by the terms of the plans, subject to the limitation that they shall not exceed the amounts deductible for income tax purposes. We also sponsor unfunded contributory supplemental retirement plans for certain employees. Generally, benefits under these plans vest gradually over a period of approximately three years from date of employment, and are based on the employee's contribution. The expense applicable to retirement plans for 2020, 2019 and 2018 was approximately $20,265, $22,573 and $22,634, respectively.

Pension plans — We have various pension plans covering a portion of our United States and international employees. Pension plan benefits are generally based on years of employment and, for salaried employees, the level of compensation. Actuarially determined amounts are contributed to United States plans to provide sufficient assets to meet future benefit payment requirements. We also sponsor an unfunded supplemental pension plan for certain employees. International subsidiaries fund their pension plans according to local requirements.

A reconciliation of the benefit obligations, plan assets, accrued benefit cost and the amount recognized in financial statements for pension plans is as follows:

	United States		International	
	2020	2019	**2020**	2019
Change in benefit obligation:				
Benefit obligation at beginning of year	**$ 551,997**	$ 425,605	**$ 97,990**	$ 87,227
Service cost	**20,635**	14,587	**2,099**	1,933
Interest cost	**15,824**	18,304	**1,025**	1,670
Participant contributions	**—**	—	**83**	83
Plan amendments	**—**	—	**—**	186
Settlements	**(4,992)**	—	**—**	(3,018)
Foreign currency exchange rate change	**—**	—	**2,814**	106
Actuarial loss	**47,788**	107,662	**2,729**	11,852
Benefits paid	**(15,484)**	(14,161)	**(1,891)**	(2,049)
Benefit obligation at end of year	**$ 615,768**	$ 551,997	**$ 104,849**	$ 97,990
Change in plan assets:				
Beginning fair value of plan assets	**$ 448,931**	$ 361,073	**$ 39,640**	$ 39,617
Actual return on plan assets	**41,712**	76,700	**3,697**	707
Company contributions	**40,083**	25,319	**3,365**	3,696
Participant contributions	**—**	—	**83**	83
Settlements	**(4,992)**	—	**—**	(3,018)
Foreign currency exchange rate change	**—**	—	**582**	604
Benefits paid	**(15,484)**	(14,161)	**(1,891)**	(2,049)
Ending fair value of plan assets	**$ 510,250**	$ 448,931	**$ 45,476**	$ 39,640
Funded status at end of year	**$ (105,518)**	$ (103,066)	**$ (59,373)**	$ (58,350)
Amounts recognized in financial statements:				
Noncurrent asset	**$ 3,162**	$ 2,171	**$ 3,321**	$ 1,375
Accrued benefit liability	**(5,211)**	(6,435)	**(634)**	(21)
Long-term pension obligations	**(103,469)**	(98,802)	**(62,060)**	(59,704)
Total amount recognized in financial statements	**$ (105,518)**	$ (103,066)	**$ (59,373)**	$ (58,350)

	United States		International	
	2020	2019	**2020**	2019
Amounts recognized in accumulated other comprehensive (gain) loss:				
Net actuarial loss	**$ 192,593**	$ 178,390	**$ 32,097**	$ 33,826
Prior service credit	**(16)**	(100)	**(2,137)**	(2,342)
Accumulated other comprehensive loss	**$ 192,577**	$ 178,290	**$ 29,960**	$ 31,484
Amounts expected to be recognized during next fiscal year:				
Amortization of net actuarial loss	**$ 14,297**	$ 13,591	**$ 3,049**	$ 2,945
Amortization of prior service credit	**(81)**	(84)	**(299)**	(288)
Total	**$ 14,216**	$ 13,507	**$ 2,750**	$ 2,657

The following table summarizes the changes in accumulated other comprehensive loss:

	United States		International	
	2020	**2019**	**2020**	**2019**
Balance at beginning of year	**$ 178,290**	$ 130,627	**$ 31,484**	$ 20,460
Net loss arising during the year	**30,743**	54,304	**305**	12,737
Prior service cost arising during the year	**—**	—	**—**	186
Net gain recognized during the year	**(14,032)**	(6,702)	**(2,972)**	(1,696)
Prior service credit recognized during the year	**84**	61	**290**	303
Settlement loss	**(2,508)**	—	**—**	(470)
Exchange rate effect during the year	**—**	—	**853**	(36)
Balance at end of year	**$ 192,577**	$ 178,290	**$ 29,960**	$ 31,484

Information regarding the accumulated benefit obligation is as follows:

	United States		International	
	2020	**2019**	**2020**	**2019**
For all plans:				
Accumulated benefit obligation	**$ 571,036**	$ 513,861	**$ 96,252**	$ 83,439
For plans with benefit obligations in excess of plan assets:				
Projected benefit obligation	**553,403**	491,816	**92,775**	86,534
Accumulated benefit obligation	**508,671**	453,681	**85,189**	73,293
Fair value of plan assets	**444,723**	386,580	**30,797**	27,769

Net periodic pension costs include the following components:

	United States			International		
	2020	**2019**	**2018**	**2020**	**2019**	**2018**
Service cost	**$ 20,635**	$ 14,587	$ 13,052	**$ 2,099**	$ 1,933	$ 2,048
Interest cost	**15,824**	18,304	14,797	**1,025**	1,670	1,656
Expected return on plan assets	**(24,667)**	(23,341)	(21,964)	**(1,273)**	(1,592)	(1,512)
Amortization of prior service cost (credit)	**(84)**	(61)	(22)	**(290)**	(303)	(316)
Amortization of net actuarial loss	**14,032**	6,702	9,479	**2,972**	1,696	2,115
Settlement loss	**2,508**	—	—	**—**	470	252
Total benefit cost	**$ 28,248**	$ 16,191	$ 15,342	**$ 4,533**	$ 3,874	$ 4,243

Net periodic pension cost for 2020, 2019 and 2018 included a settlement loss of $2,508, $470 and $252, respectively, due to lump sum retirement payments.

The components of net periodic pension cost other than service cost are included in Other – net in our Consolidated Statements of Income.

The weighted average assumptions used in the valuation of pension benefits were as follows:

	United States			International		
	2020	**2019**	**2018**	**2020**	**2019**	**2018**
Assumptions used to determine benefit obligations at October 31:						
Discount rate	**2.85 %**	3.25 %	4.53 %	**1.01 %**	1.26 %	2.14 %
Rate of compensation increase	**4.00**	4.00	3.90	**2.69**	3.12	3.12
Assumptions used to determine net benefit costs for the years ended October 31:						
Discount rate - benefit obligation	**3.25**	4.53	3.80	**1.26**	2.14	2.07
Discount rate - service cost	**3.56**	4.70	4.01	**1.12**	1.82	1.76
Discount rate - interest cost	**2.78**	4.15	3.31	**1.05**	1.90	1.83
Expected return on plan assets	**5.75**	6.00	6.00	**3.22**	3.96	3.91
Rate of compensation increase	**4.00**	3.90	3.61	**3.12**	3.12	3.13

The amortization of prior service cost is determined using a straight-line amortization of the cost over the average remaining service period of employees expected to receive benefits under the plans.

The discount rate reflects the current rate at which pension liabilities could be effectively settled at the end of the year. The discount rate used considers a yield derived from matching projected pension payments with maturities of a portfolio of available bonds that receive the highest rating given from a recognized investments ratings agency. The changes in the discount rates in 2020, 2019, and 2018 are due to changes in yields for these types of investments as a result of the economic environment.

In determining the expected return on plan assets using the calculated value of plan assets, we consider both historical performance and an estimate of future long-term rates of return on assets similar to those in our plans. We consult with and consider the opinions of financial and other professionals in developing appropriate return assumptions. The rate of compensation increase is based on management's estimates using historical experience and expected increases in rates.

Net actuarial gains or losses are amortized to expense on a plan-by-plan basis when they exceed the accounting corridor, which is set at 10 percent of the greater of the plan assets or benefit obligations. Gains or losses outside of the corridor are subject to amortization over an average employee future service period that differs by plan. If substantially all of the plan's participants are no longer actively accruing benefits, the average life expectancy is used.

The allocation of pension plan assets as of October 31, 2020 and 2019 is as follows:

	United States		International	
	2020	**2019**	**2020**	**2019**
Asset Category				
Equity securities	**11 %**	11 %	**— %**	— %
Debt securities	**49**	53	**—**	—
Insurance contracts	**—**	—	**54**	54
Pooled investment funds	**39**	35	**44**	45
Other	**1**	1	**2**	1
Total	**100 %**	100 %	**100 %**	100 %

Our investment objective for defined benefit plan assets is to meet the plans' benefit obligations, while minimizing the potential for future required plan contributions.

Our United States plans comprise 92 percent of the Company's worldwide pension assets. In general, the investment strategies focus on asset class diversification, liquidity to meet benefit payments and an appropriate balance of long-term investment return and risk. Target ranges for asset allocations are determined by dynamically matching the actuarial projections of the plans' future liabilities and benefit payments with expected long-term rates of return on the assets, taking into account investment return volatility and correlations across asset classes. For 2020, the target in "return-seeking assets" is 30 percent and 70 percent in fixed income assets. Plan assets are diversified across several investment managers and are invested in liquid funds that are selected to track broad market indices. Investment risk is carefully controlled with plan assets rebalanced to target allocations on a periodic basis and continual monitoring of investment managers' performance relative to the investment guidelines established with each investment manager.

Our international plans comprise 8 percent of the Company's worldwide pension assets. Asset allocations are developed on a country-specific basis. Our investment strategy is to cover pension obligations with insurance contracts or to employ independent managers to invest the assets.

The fair values of our pension plan assets at October 31, 2020 by asset category are in the table below:

	United States				International			
	Total	**Level 1**	**Level 2**	**Level 3**	**Total**	**Level 1**	**Level 2**	**Level 3**
Cash	$ 1,331	$ 1,331	$ —	$ —	$ 759	$ 759	$ —	$ —
Money market funds	5,059	5,059	—	—	—	—	—	—
Equity securities:								
Basic materials	1,750	1,750	—	—	—	—	—	—
Consumer goods	5,024	5,024	—	—	—	—	—	—
Financial	4,745	4,745	—	—	—	—	—	—
Healthcare	4,518	4,518	—	—	—	—	—	—
Industrial goods	3,588	3,588	—	—	—	—	—	—
Technology	5,706	5,706	—	—	—	—	—	—
Utilities	685	685	—	—	—	—	—	—
Mutual funds	24,266	24,266	—	—	—	—	—	—
Fixed income securities:								
U.S. Government	71,855	8,267	63,588	—	—	—	—	—
Corporate	173,046	—	173,046	—	—	—	—	—
Other	6,673	—	6,673	—	—	—	—	—
Other types of investments:								
Insurance contracts	—	—	—	—	24,496	—	—	24,496
Other	845	845	—	—	—	—	—	—
Total investments in the fair value hierarchy	$309,091	$65,784	$243,307	$ —	$ 25,255	$ 759	$ —	$24,496
Investments measured at Net Asset Value:								
Real estate collective funds	38,996				—			
Pooled investment funds	162,163				20,221			
Total Investments at Fair Value	$510,250				$ 45,476			

The fair values of our pension plan assets at October 31, 2019 by asset category are in the table below:

	United States				International			
	Total	Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3
Cash	$ 1,208	$ 1,208	$ —	$ —	$ 441	$ 441	$ —	$ —
Money market funds	5,566	5,566	—	—	—	—	—	—
Equity securities:								
Basic materials	2,318	2,318	—	—	—	—	—	—
Consumer goods	4,412	4,412	—	—	—	—	—	—
Financial	6,120	6,120	—	—	—	—	—	—
Healthcare	4,460	4,460	—	—	—	—	—	—
Industrial goods	3,152	3,152	—	—	—	—	—	—
Technology	5,064	5,064	—	—	—	—	—	—
Utilities	937	937	—	—	—	—	—	—
Mutual funds	19,674	19,674	—	—	—	—	—	—
Fixed income securities:								
U.S. Government	83,025	13,094	69,931	—	—	—	—	—
Corporate	151,607	—	151,607	—	—	—	—	—
Other	5,051	—	5,051	—	—	—	—	—
Other types of investments:								
Insurance contracts	—	—	—	—	21,245	—	—	21,245
Other	1,101	1,101	—	—	—	—	—	—
Total investments in the fair value hierarchy	$293,695	$67,106	$226,589	$ —	$ 21,686	$ 441	$ —	$21,245
Investments measured at Net Asset Value:								
Real estate collective funds	33,917				—			
Pooled investment funds	121,319				17,954			
Total Investments at Fair Value	$448,931				$ 39,640			

These investment funds did not own a significant number of shares of Nordson Corporation common stock for any year presented.

The inputs and methodology used to measure fair value of plan assets are consistent with those described in Note 12. Following are the valuation methodologies used to measure these assets:

- **Money market funds** - Money market funds are public investment vehicles that are valued with a net asset value of one dollar. This is a quoted price in an active market and is classified as Level 1.
- **Equity securities** - Common stocks and mutual funds are valued at the closing price reported on the active market on which the individual securities are traded and are classified as Level 1.
- **Fixed income securities** - U.S. Treasury bills reflect the closing price on the active market in which the securities are traded and are classified as Level 1. Securities of U.S. agencies are valued using bid evaluations and are classified as Level 2. Corporate fixed income securities are valued using evaluated prices, such as dealer quotes, bids and offers and are therefore classified as Level 2.
- **Insurance contracts** - Insurance contracts are investments with various insurance companies. The contract value represents the best estimate of fair value. These contracts do not hold any specific assets. These investments are classified as Level 3.
- **Real estate collective funds** – These funds are valued using the net asset value of the underlying properties. Net asset value is calculated using a combination of key inputs, such as revenue and expense growth rates, terminal capitalization rates and discount rates.
- **Pooled investment funds** - These are public investment vehicles valued using the net asset value. The net asset value is based on the value of the assets owned by the plan, less liabilities. These investments are not quoted on an active exchange.

The following tables present an analysis of changes during the years ended October 31, 2020 and 2019 in Level 3 plan assets, by plan asset class, for U.S. and international pension plans using significant unobservable inputs to measure fair value:

	Fair Value Measurements Using Significant Unobservable Inputs (Level 3)	
	Insurance contracts	**Total**
Beginning balance at October 31, 2019	**$ 21,245**	**$ 21,245**
Actual return on plan assets:		
Assets held, end of year	**1,739**	**1,739**
Assets sold during the period	**—**	**—**
Purchases	**2,462**	**2,462**
Sales	**(1,495)**	**(1,495)**
Foreign currency translation	**545**	**545**
Ending balance at October 31, 2020	**$ 24,496**	**$ 24,496**

	Fair Value Measurements Using Significant Unobservable Inputs (Level 3)	
	Insurance contracts	**Total**
Beginning balance at October 31, 2018	$ 21,645	$ 21,645
Actual return on plan assets:		
Assets held, end of year	913	913
Assets sold during the period	—	—
Purchases	2,431	2,431
Sales	(4,102)	(4,102)
Foreign currency translation	358	358
Ending balance at October 31, 2019	**$ 21,245**	**$ 21,245**

Contributions to pension plans in 2021 are estimated to be approximately $43,721.

Retiree pension benefit payments, which reflect expected future service, are anticipated to be paid as follows:

Year	**United States**	**International**
2021	$ 23,045	$ 3,488
2022	20,262	3,042
2023	21,686	3,069
2024	23,213	3,527
2025	25,209	3,721
2026-2030	150,280	19,949

Other postretirement plans - We sponsor an unfunded postretirement health care benefit plan covering certain of our United States employees. Employees hired after January 1, 2002, are not eligible to participate in this plan. For eligible retirees under the age of 65 who enroll in the plan, the plan is contributory in nature, with retiree contributions in the form of premiums that are adjusted annually. For eligible retirees age 65 and older who enroll in the plan, the plan delivers a benefit in the form of a Health Reimbursement Account (HRA), which retirees use for eligible reimbursable expenses, including premiums paid for purchase of a Medicare supplement plan or other out-of-pocket medical expenses such as deductibles or co-pays.

A reconciliation of the benefit obligations, accrued benefit cost and the amount recognized in financial statements for other postretirement plans is as follows:

	United States		International	
	2020	**2019**	**2020**	**2019**
Change in benefit obligation:				
Benefit obligation at beginning of year	**$ 88,660**	$ 72,010	**$ 454**	$ 512
Service cost	**666**	545	**15**	16
Interest cost	**2,345**	2,984	**13**	19
Participant contributions	**611**	684	**—**	—
Foreign currency exchange rate change	**—**	—	**(5)**	(1)
Actuarial (gain) loss	**(2,024)**	15,101	**(26)**	(86)
Benefits paid	**(2,613)**	(2,664)	**(6)**	(6)
Benefit obligation at end of year	**$ 87,645**	$ 88,660	**$ 445**	$ 454
Change in plan assets:				
Beginning fair value of plan assets	**$ —**	$ —	**$ —**	$ —
Company contributions	**2,002**	1,980	**6**	6
Participant contributions	**611**	684	**—**	—
Benefits paid	**(2,613)**	(2,664)	**(6)**	(6)
Ending fair value of plan assets	**$ —**	$ —	**$ —**	$ —
Funded status at end of year	**$ (87,645)**	$ (88,660)	**$ (445)**	$ (454)
Amounts recognized in financial statements:				
Accrued benefit liability	**$ (2,835)**	$ (2,740)	**$ (6)**	$ (6)
Long-term postretirement obligations	**(84,810)**	(85,920)	**(439)**	(448)
Total amount recognized in financial statements	**$ (87,645)**	$ (88,660)	**$ (445)**	$ (454)

	United States		International	
	2020	**2019**	**2020**	**2019**
Amounts recognized in accumulated other comprehensive (gain) loss:				
Net actuarial (gain) loss	**$ 25,614**	$ 28,992	**$ (466)**	$ (482)
Prior service credit	**—**	(16)	**—**	—
Accumulated other comprehensive (gain) loss	**$ 25,614**	$ 28,976	**$ (466)**	$ (482)
Amounts expected to be recognized during next fiscal year:				
Amortization of net actuarial (gain) loss	**$ 1,388**	$ 1,674	**$ (39)**	$ (37)
Amortization of prior service credit	**—**	(16)	**—**	—
Total	**$ 1,388**	$ 1,658	**$ (39)**	$ (37)

The following table summarizes the changes in accumulated other comprehensive (gain) loss:

	United States		International	
	2020	**2019**	**2020**	**2019**
Balance at beginning of year	**$ 28,976**	$ 14,483	**$ (482)**	$ (423)
Net (gain) loss arising during the year	**(2,024)**	15,101	**(26)**	(86)
Net gain (loss) recognized during the year	**(1,355)**	(634)	**36**	28
Prior service credit recognized during the year	**17**	26	—	—
Exchange rate effect during the year	**—**	—	**6**	(1)
Balance at end of year	**$ 25,614**	$ 28,976	**$ (466)**	$ (482)

Net postretirement benefit costs include the following components:

	United States			International		
	2020	**2019**	**2018**	**2020**	**2019**	**2018**
Service cost	**$ 666**	$ 545	$ 709	**$ 15**	$ 16	$ 20
Interest cost	**2,345**	2,984	2,557	**13**	19	20
Amortization of prior service credit	**(17)**	(26)	(99)	**—**	—	—
Amortization of net actuarial (gain) loss	**1,355**	634	1,079	**(36)**	(28)	(20)
Total benefit cost (credit)	**$ 4,349**	$ 4,137	$ 4,246	**$ (8)**	$ 7	$ 20

The weighted average assumptions used in the valuation of postretirement benefits were as follows:

	United States			International		
	2020	**2019**	**2018**	**2020**	**2019**	**2018**
Assumptions used to determine benefit obligations at October 31:						
Discount rate	**2.84 %**	3.27 %	4.56 %	**2.94 %**	3.03 %	3.88 %
Health care cost trend rate	**3.40**	3.62	3.75	**4.22**	4.00	6.35
Rate to which health care cost trend rate is assumed to incline/decline (ultimate trend rate)	**3.17**	3.24	3.27	**4.05**	4.05	3.50
Year the rate reaches the ultimate trend rate	**2026**	2026	2026	**2040**	2040	2037
Assumption used to determine net benefit costs for the years ended October 31:						
Discount rate benefit obligation	**3.27 %**	4.56 %	3.86 %	**3.03 %**	3.88 %	3.52 %
Discount rate service cost	**3.61**	4.77	4.11	**3.05**	3.90	3.54
Discount rate interest cost	**2.79**	4.18	3.39	**2.88**	3.80	3.40

The weighted average health care trend rates reflect expected increases in the Company's portion of the obligation.

Net actuarial gains or losses are amortized to expense on a plan-by-plan basis when they exceed the accounting corridor, which is set at 10 percent of the greater of the plan assets or benefit obligations. Gains or losses outside of the corridor are subject to amortization over an average employee future service period that differs by plan. If substantially all of the plan's participants are no longer actively accruing benefits, the average life expectancy is used.

A one-percentage point change in the assumed health care cost trend rate would have the following effects. Bracketed numbers represent decreases in expense and obligation amounts.

	United States		International	
	1% Point Increase	**1% Point Decrease**	**1% Point Increase**	**1% Point Decrease**
Health care trend rate:				
Effect on total net postretirement benefit cost components in 2020	$ 431	$ (345)	$ 7	$ (5)
Effect on postretirement obligation as of October 31, 2020	$ 11,019	$ (9,100)	$ 103	$ (80)

Contributions to postretirement plans in 2021 are estimated to be approximately $2,800.

Retiree postretirement benefit payments are anticipated to be paid as follows:

Year	United States	International
2021	$ 2,835	$ 6
2022	3,047	6
2023	3,238	6
2024	3,444	6
2025	3,623	6
2026-2030	20,133	46

Note 8 — Income taxes

Income tax expense includes the following:

	2020	2019	2018
Current:			
U.S. federal	**$ 19,265**	$ 40,012	$ 39,837
State and local	**984**	3,429	1,734
Foreign	**45,657**	51,590	63,522
Total current	**65,906**	95,031	105,093
Deferred:			
U.S. federal	**(10,143)**	1,470	(32,829)
State and local	**(1,023)**	633	891
Foreign	**(2,790)**	(3,121)	(2,011)
Total deferred	**(13,956)**	(1,018)	(33,949)
	$ 51,950	$ 94,013	$ 71,144

Earnings before income taxes of domestic operations, which are calculated after intercompany profit eliminations, were $120,054, $222,435 and $192,643 in 2020, 2019 and 2018, respectively.

Our income tax provision for 2020 included a tax benefit of $15,661 due to our share-based payment transactions. Income before taxes in 2020 included a non-cash, assets held for sale impairment charge of $87,371 related to our commitment to sell our screws and barrels product line within the Adhesives reporting unit under our Industrial Precision Solutions segment and the tax benefit of the impairment was $15,254. A portion of the impairment charge did not have related tax benefits.

Our income tax provision for 2019 included a provisional tax benefit of $4,866 to reflect the adjustment to the provisional amounts recognized in 2018 due to changes in interpretations and assumptions and the finalization of estimates related to the U.S. Tax Cuts and Jobs Act ("the Act"). We are paying the transition tax in installments over the eight-year period allowable under the Act. The remaining transition tax is included in other long-term liabilities in the Consolidated Balance Sheet at October 31, 2020.

Other provisions of the Act became effective for us in 2019. The Foreign-Derived Intangible Income provision generates a deduction against our U.S. taxable income for U.S. earnings derived offshore that utilize intangibles held in the U.S. Conversely, the Global Intangible Low-Taxed Income (“GILTI”) provision requires us to subject to U.S. taxation a portion of our foreign subsidiary earnings that exceed an allowable return. We elected to treat any GILTI inclusion as a period expense in the year incurred.

A reconciliation of the U.S. statutory federal rate to the worldwide consolidated effective tax rate follows:

	2020	2019	2018
Statutory federal income tax rate	**21.00 %**	21.00 %	23.34 %
Transition tax	**—**	1.46	6.16
Tax rate change deferred tax remeasurement	**—**	—	(10.94)
Share-based and other compensation	**(4.15)**	(0.55)	(1.45)
Domestic production deduction	**—**	—	(0.82)
Foreign tax rate variances, net of foreign tax credits	**1.51**	1.16	(0.46)
State and local taxes, net of federal income tax benefit	**(0.01)**	0.74	0.45
Amounts related to prior years	**(0.04)**	(0.55)	(0.21)
Foreign-Derived Intangible Income Deduction	**(0.95)**	(1.51)	—
Global Intangible Low-Taxed Income net of foreign tax credits	**0.97**	0.85	—
Other – net	**(1.10)**	(0.79)	(0.21)
Effective tax rate	**17.23 %**	21.81 %	15.86 %

Earnings before income taxes of international operations, which are calculated before intercompany profit elimination entries, were $181,435, $208,669 and $255,877 in 2020, 2019 and 2018, respectively. Deferred income taxes are not provided on undistributed earnings of international subsidiaries that are intended to be permanently invested in their operations. These undistributed earnings represent the post-income tax earnings under U.S. GAAP not adjusted for previously taxed income which aggregated approximately $1,045,389 and $1,101,736 at October 31, 2020 and 2019, respectively. Should these earnings be distributed, applicable foreign tax credits, distributions of previously taxed income, and utilization of other attributes would substantially offset taxes due upon the distribution. It is not practical to estimate the amount of additional taxes that might be payable on these basis differences because of the multiple methods by which these differences could reverse and the impact of withholding, U.S. state and local taxes and currency translation considerations.

At October 31, 2020 and 2019, total unrecognized tax benefits were $6,717 and $2,909, respectively. The amounts that, if recognized, would impact the effective tax rate were $5,998 and $2,429 at October 31, 2020 and 2019, respectively. During 2020, unrecognized tax benefits related primarily to domestic positions and, as recognized, a substantial portion of the gross unrecognized tax benefits were offset against assets recorded in the Consolidated Balance Sheet. A reconciliation of the beginning and ending amount of unrecognized tax benefits for 2020, 2019 and 2018 is as follows:

	2020	2019	2018
Balance at beginning of year	**$ 2,909**	$ 2,891	$ 3,781
Additions based on tax positions related to the current year	**370**	370	310
Additions for tax positions of prior years	**4,068**	547	40
Reductions for tax positions of prior years	**—**	—	(120)
Settlements	**(137)**	—	—
Lapse of statute of limitations	**(493)**	(899)	(1,120)
Balance at end of year	**$ 6,717**	$ 2,909	$ 2,891

At October 31, 2020 and 2019, we had accrued interest and penalty expense related to unrecognized tax benefits of $2,179 and $593, respectively. We include interest accrued related to unrecognized tax benefits in interest expense. Penalties, if incurred, would be recognized as other income (expense).

We are subject to United States Federal income tax as well as income taxes in numerous state and foreign jurisdictions. We are subject to examination in the U.S. by the Internal Revenue Service (IRS) for the 2017 through 2020 tax years; tax years prior to the 2017 year are closed to further examination by the IRS. Generally, major state and foreign jurisdiction tax years remain open to examination for tax years after 2014. Within the next twelve months, it is reasonably possible that certain statute of limitations periods would expire, which could result in a minimal decrease in our unrecognized tax benefits.

Significant components of deferred tax assets and liabilities are as follows:

	2020	2019
Deferred tax assets:		
Employee benefits	**$ 70,838**	$ 73,025
Other accruals not currently deductible for taxes	**16,207**	16,294
Tax credit and loss carryforwards	**20,268**	18,074
Inventory adjustments	**8,757**	5,269
Total deferred tax assets	**116,070**	112,662
Valuation allowance	**(22,233)**	(15,301)
Total deferred tax assets	**93,837**	97,361
Deferred tax liabilities:		
Depreciation and amortization	**150,591**	169,009
Other - net	**410**	655
Total deferred tax liabilities	**151,001**	169,664
Net deferred tax liabilities	**$ (57,164)**	$ (72,303)

At October 31, 2020, we had $8,565 of tax credit carryforwards, $921 of which expires in 2028 and $7,644 of which has an indefinite carryforward period. We also had $58,559 state, $24,394 foreign operating loss carryforwards, and a $24,227 capital loss carryforward, of which $88,613 will expire in 2021 through 2040, and $18,567 of which has an indefinite carryforward period. The net change in the valuation allowance was an increase of $6,932 in 2020 and of $439 in 2019. The valuation allowance of $22,233 at October 31, 2020, related primarily to tax credits and loss carryforwards that may expire before being realized. We continue to assess the need for valuation allowances against deferred tax assets based on determinations of whether it is more likely than not that deferred tax benefits will be realized.

Note 9 — Bank lines of credit

Bank lines of credit are summarized as follows:

	2020	2019
Maximum borrowings available under bank lines of credit (all foreign banks)	**$ 74,766**	**$ 79,930**
Unused bank lines of credit	**$ 74,766**	**$ 79,930**

Note 10 — Long-term debt

A summary of long-term debt is as follows:

	2020	2019
Senior notes, due 2021-2025	**$ 109,900**	$ 140,800
Senior notes, due 2021-2027	**85,714**	92,857
Senior notes, due 2023-2030	**350,000**	350,000
Term loan, due 2022-2024	**255,000**	505,000
Euro loan, due 2023	**308,642**	128,219
Private shelf facility	**—**	30,556
Development loans	**—**	951
	1,109,256	1,248,383
Less current maturities	**38,043**	168,738
Less unamortized debt issuance costs	**3,261**	4,241
Long-term maturities	**$ 1,067,952**	$ 1,075,404

Revolving credit agreement — In April 2019, we entered into a $850,000 unsecured multi-currency credit facility with a group of banks, which amended, restated and extended our existing syndicated revolving credit agreement that was scheduled to expire in February 2020. This facility has a five-year term and includes a $75,000 subfacility for swing-line loans. It expires in April 2024. At October 31, 2020 and October 31, 2019, we had no balances outstanding under this facility. We were in compliance with all covenants at October 31, 2020, and the amount we could borrow under the facility would not have been limited by any debt covenants.

Senior notes, due 2021-2025 — These unsecured fixed-rate notes entered into in 2012 with a group of insurance companies had a remaining weighted-average life of 2.33 years. The weighted-average interest rate at October 31, 2020 was 3.07 percent.

Senior notes, due 2021-2027 — These unsecured fixed-rate notes entered into in 2015 with a group of insurance companies had a remaining weighted-average life of 3.91 years. The weighted-average interest rate at October 31, 2020 was 3.06 percent.

Senior notes, due 2023-2030 — These unsecured fixed-rate notes entered in 2019 with a group of insurance companies had a remaining weighted-average life of 5.04 years. The weighted-average interest rate at October 31, 2020 was 3.90 percent.

Term loan, due 2022-2024 — In April 2019, we amended, restated and extended the term of our existing $605,000 term loan facility with a group of banks. The interest rate is variable based upon the LIBOR rate. At October 31, 2020, $255,000 was outstanding under this facility. The Term Loan Agreement provides for the following term loans due in two tranches: $50,000 is due in September 2022, and $205,000 is due in March 2024. The weighted average interest rate for borrowings under this agreement was 0.83 percent at October 31, 2020. We were in compliance with all covenants at October 31, 2020

Euro loan, due 2023 — In March 2020 we amended, restated and extended the term of our existing term loan facility with Bank of America Merrill Lynch International Limited. The interest rate is variable based on the EURIBOR rate. The Term Loan Agreement provides for the following term loans due in two tranches: €115,000 is due in March 2023 and an additional €150,000 that was drawn down in March 2020 is due in March 2023. The weighted average interest rate at October 31, 2020 was 0.71 percent. We were in compliance with all covenants at October 31, 2020.

Private shelf facility — In October 2020, we amended, restated and extended the term of the unsecured $200,000 private shelf facility agreement with New York Life Investment Management LLC. The facility has a three-year term and expires in October 2023. The interest rate on each borrowing is fixed based upon the market rate at the borrowing date or is variable based upon the LIBOR rate. At October 31, 2020, there was no outstanding balance under this facility.

Annual maturities — The annual maturities of long-term debt for the five years subsequent to October 31, 2020, are as follows: $38,043 in 2021; $80,642 in 2022; $439,285 in 2023; $315,643 in 2024 and $85,643 in 2025.

Note 11 — Leases

We review new contracts to determine if the contracts include a lease. To the extent a lease agreement includes an extension option that is reasonably certain to be exercised, we have recognized those amounts as part of the right-of-use assets and lease liabilities. We combine lease and non-lease components, such as common area maintenance, in the calculation of the lease assets and related liabilities. As most lease agreements do not provide an implicit rate, we use an incremental borrowing rate (IBR) based on information available at the lease commencement date in determining the present value of lease payments and to help classify the lease as operating or financing. We calculate the IBR based on a bond yield curve which considers secured borrowing rates based on our credit rating and current economic environment, as well as other publicly available data.

We lease certain manufacturing facilities, warehouse space, machinery and equipment, and vehicles. We often have options to renew lease terms for buildings and other assets. We evaluate renewal and termination options at the lease commencement date to determine if we are reasonably certain to exercise the option on the basis of economic factors. Leases with an initial term of 12 months or less (short-term leases) are not recorded on the Consolidated Balance Sheet. Lease expense for operating leases is recognized on a straight-line basis over the lease term, with variable lease payments recognized in the period those payments occur. Variable payments for leases primarily relate to future rates or amounts, miles, or other quantifiable usage factors which are not determinable at the time the lease agreement commences. Finance lease assets are recorded in Property, plant, and equipment – net on the Consolidated Balance Sheet with related amortization recorded in depreciation expense on the Consolidated Statement of Cash Flows. As of October 31, 2020, we had no material leases that had yet to commence.

Additional lease information is summarized below for the twelve months ended October 31, 2020:

	October 31, 2020	
	Finance Leases	Operating Leases
Amortization of right of use assets	$ 7,087	$ —
Interest	350	—
Lease cost[(1)]	7,437	21,489
Short-term and variable lease cost[(1)]	1,478	3,011
Total lease cost	$ 8,915	$ 24,500

[(1)] Lease costs are recorded in both Cost of sales and Selling and administrative expenses on the Consolidated Statements of Income.

Supplemental cash flow information is summarized below for the twelve months ended October 31, 2020:

Cash outflows for leases	$ 7,605	$ 20,918
Weighted average remaining lease term (years)	4.65	10.47
Weighted average discount rate	2.39%	1.70%

The following table reconciles the undiscounted cash flows for five years and thereafter to the operating and finance lease liabilities recognized on the Consolidated Balance Sheet as of October 31, 2020. The reconciliation excludes short-term leases that are not recognized on the Consolidated Balance Sheet.

Year:	Finance Leases	Operating Leases
2021	$ 6,226	$ 18,821
2022	4,332	17,367
2023	2,655	14,805
2024	999	13,163
2025	652	11,265
Later years	2,956	63,986
Total minimum lease payments	17,820	139,407
Amounts representing interest	1,366	13,172
Present value of minimum lease payments	$ 16,454	$ 126,235

Rental expense for operating leases during the fiscal years ended October 31, 2019 and October 31, 2018 was $22,061 and $19,131, respectively.

Assets held under capitalized finance leases and included in property, plant and equipment during the fiscal years ended October 31, 2020 and October 31, 2019 was $15,659 and $14,588, respectively.

Note 12 — Fair value measurements

The inputs to the valuation techniques used to measure fair value are classified into the following categories:

Level 1: Quoted market prices in active markets for identical assets or liabilities.

Level 2: Observable market based inputs or unobservable inputs that are corroborated by market data.

Level 3: Unobservable inputs that are not corroborated by market data.

The following tables present the classification of our assets and liabilities measured at fair value on a recurring basis:

October 31, 2020	**Total**	**Level 1**	**Level 2**	**Level 3**
Assets:				
Foreign currency forward contracts [(a)]	**$ 2,700**	**$ —**	**$ 2,700**	**$ —**
Total assets at fair value	**$ 2,700**	**$ —**	**$ 2,700**	**$ —**
Liabilities:				
Deferred compensation plans [(b)]	**$ 12,304**	**$ —**	**$ 12,304**	**$ —**
Foreign currency forward contracts [(a)]	**5,937**	**—**	**5,937**	**—**
Total liabilities at fair value	**$ 18,241**	**$ —**	**$ 18,241**	**$ —**

October 31, 2019	**Total**	**Level 1**	**Level 2**	**Level 3**
Assets:				
Foreign currency forward contracts [(a)]	$ 5,042	$ —	$ 5,042	$ —
Total assets at fair value	$ 5,042	$ —	$ 5,042	$ —
Liabilities:				
Deferred compensation plans [(b)]	$ 11,850	$ —	$ 11,850	$ —
Foreign currency forward contracts [(a)]	2,381	—	2,381	—
Total liabilities at fair value	$ 14,231	$ —	$ 14,231	$ —

(a) We enter into foreign currency forward contracts to reduce the risk of foreign currency exposures resulting from receivables, payables, intercompany receivables, intercompany payables and loans denominated in foreign currencies. Foreign exchange contracts are valued using market exchange rates. These foreign exchange contracts are not designated as hedges.

(b) Executive officers and other highly compensated employees may defer up to 100 percent of their salary and annual cash incentive compensation and for executive officers, up to 90 percent of their long-term incentive compensation, into various non-qualified deferred compensation plans. Deferrals can be allocated to various market performance measurement funds. Changes in the value of compensation deferred under these plans are recognized each period based on the fair value of the underlying measurement funds.

Fair value disclosures related to goodwill and indefinite-lived intangible assets are disclosed in Note 6.

The carrying amounts and fair values of financial instruments, other than cash and cash equivalents, receivables, and accounts payable, are shown in the table below. The carrying values of cash and cash equivalents, receivables and accounts payable approximate fair value due to the short-term nature of these instruments.

	2020		**2019**	
	Carrying Amount	**Fair Value**	**Carrying Amount**	**Fair Value**
Long-term debt (including current portion)	**$ 1,105,995**	**$ 1,170,073**	$ 1,244,142	$ 1,278,142

We used the following methods and assumptions in estimating the fair value of financial instruments:

- Long-term debt is valued by discounting future cash flows at currently available rates for borrowing arrangements with similar terms and conditions, which are considered to be Level 2 inputs under the fair value hierarchy. The carrying amount of long-term debt is shown net of unamortized debt issuance costs as described in Note 10.

Note 13 — Derivative financial instruments

We operate internationally and enter into intercompany transactions denominated in foreign currencies. Consequently, we are subject to market risk arising from exchange rate movements between the dates foreign currency transactions occur and the dates they are settled. We regularly use foreign currency forward contracts to reduce our risks related to most of these transactions. These contracts usually have maturities of 90 days or less and generally require us to exchange foreign currencies for U.S. dollars at maturity, at rates stated in the contracts. These contracts are not designated as hedging instruments under U.S. GAAP. Accordingly, the changes in the fair value of the foreign currency forward contracts are recognized in each accounting period in "Other – net" on the Consolidated Statement of Income together with the transaction gain or loss from the related balance sheet position. In 2020, we recognized net losses of $5,899 on foreign currency forward contracts and net gains of $4,367 from the change in fair value of balance sheet positions. In 2019, we recognized net gains of $2,373 on foreign currency forward contracts and net losses of $2,231 from the change in fair value of balance sheet positions. In 2018, we recognized net losses of $3,151 on foreign currency forward contracts and net gains of $4,284 from the change in fair value of balance sheet positions. The fair values of our foreign currency forward contract assets and liabilities are included in Prepaid expenses and other current assets and Accrued liabilities, respectively in the Consolidated Balance Sheets.

The following table summarizes, by currency, the contracts outstanding at October 31, 2020 and 2019:

	Notional Amounts	
	Sell	**Buy**
October 31, 2020 contract amounts:		
Euro	**$ 127,849**	**$ 259,510**
Pound sterling	**36,943**	**71,380**
Japanese yen	**23,262**	**41,133**
Australian dollar	**179**	**9,084**
Hong Kong dollar	**59,459**	**81,199**
Singapore dollar	**1,102**	**17,350**
Others	**6,985**	**73,310**
Total	**$ 255,779**	**$ 552,966**
October 31, 2019 contract amounts:		
Euro	$ 264,661	$ 107,598
Pound sterling	32,600	48,867
Japanese yen	29,397	51,217
Australian dollar	168	7,767
Hong Kong dollar	189	135,862
Singapore dollar	1,108	15,684
Others	4,485	66,349
Total	$ 332,608	$ 433,344

We are exposed to credit-related losses in the event of nonperformance by counterparties to financial instruments. These financial instruments include cash deposits and foreign currency forward contracts. We periodically monitor the credit ratings of these counterparties in order to minimize our exposure. Our customers represent a wide variety of industries and geographic regions. As of October 31, 2020 and 2019, there were no significant concentrations of credit risk.

Note 14 — Capital shares

Preferred — We have authorized 10,000 Series A convertible preferred shares without par value. No preferred shares were outstanding in 2020, 2019 or 2018.

Common — We have 160,000 authorized common shares without par value. At October 31, 2020 and 2019, there were 98,023 common shares issued. At October 31, 2020 and 2019, the number of outstanding common shares, net of treasury shares, was 58,081 and 57,600, respectively.

Common shares repurchased as part of publicly announced programs during 2020, 2019 and 2018 were as follows:

Year	Number of Shares	Total Amount	Average per Share
2020	**303**	**38,138**	**$ 125.70**
2019	949	114,790	$ 121.01
2018	145	18,939	$ 130.21

Note 15 — Stock-based compensation

During the 2018 Annual Meeting of Shareholders, our shareholders approved the Amended and Restated 2012 Stock Incentive and Award Plan (the “2012 Plan”). The 2012 Plan provides for the granting of stock options, stock appreciation rights, restricted shares, restricted share units, performance shares, cash awards and other stock or performance-based incentives. A maximum of 4,525 common shares are available for grant under the 2012 Plan.

Stock options — Nonqualified or incentive stock options may be granted to our employees and directors. Generally, options granted to employees may be exercised beginning one year from the date of grant at a rate not exceeding 25 percent per year and expire 10 years from the date of grant. Vesting accelerates upon a qualified termination in connection with a change in control. In the event of termination of employment due to early retirement or normal retirement at age 65, options granted within 12 months prior to termination are forfeited, and vesting continues post retirement for all other unvested options granted. In the event of disability or death, all unvested stock options granted within 12 months prior to termination (or at any time prior to December 28, 2017) fully vest. Termination for any other reason results in forfeiture of unvested options and vested options in certain circumstances. The amortized cost of options is accelerated if the retirement eligibility date occurs before the normal vesting date. Option exercises are satisfied through the issuance of treasury shares on a first-in, first-out basis. We recognized compensation expense related to stock options of $10,087, $10,067 and $9,964 for 2020, 2019 and 2018, respectively.

The following table summarizes activity related to stock options during 2020:

	Number of Options	Weighted-Average Exercise Price Per Share	Aggregate Intrinsic Value	Weighted-Average Remaining Term
Outstanding at October 31, 2019	1,787	$ 97.74		
Granted	391	$ 166.38		
Exercised	(644)	$ 78.91		
Forfeited or expired	(47)	$ 145.52		
Outstanding at October 31, 2020	1,487	$ 122.45	$ 105,536	7.0 years
Expected to vest	845	$ 141.28	$ 44,065	8.1 years
Exercisable at October 31, 2020	632	$ 96.79	$ 61,104	5.5 years

Summarized information on currently outstanding options follows:

	Range of Exercise Price		
	$43 - $90	$91 - $140	$141 - $190
Number outstanding	279	844	364
Weighted-average remaining contractual life, in years	4.0	7.1	9.1
Weighted-average exercise price	$ 70.40	$ 120.56	$ 166.66
Number exercisable	279	352	1
Weighted-average exercise price	$ 70.40	$ 117.43	$ 165.21

As of October 31, 2020, there was $11,294 of total unrecognized compensation cost related to nonvested stock options. That cost is expected to be amortized over a weighted average period of approximately 1.7 years.

The Black-Scholes option valuation model was used to estimate the fair value of traded options that have no vesting restrictions and are fully transferable. Option valuation models require the input of subjective assumptions, including the expected stock price volatility. The fair value of each option grant was estimated at the date of grant using the Black-Scholes option-pricing model with the following assumptions:

	2020	2019	2018
Expected volatility	**24.5%-30.5%**	24.1%-24.5%	24.0%-26.7%
Expected dividend yield	**0.87%-1.16%**	1.04%	0.97%
Risk-free interest rate	**0.44%-1.69%**	2.84%-2.95%	2.09%-2.20%
Expected life of the option (in years)	**5.3-6.3**	5.3-6.2	5.4-6.2

The weighted-average expected volatility used to value options granted in 2020, 2019 and 2018 was 25.4 percent, 24.3 percent and 25.0 percent, respectively.

Historical information was the primary basis for the selection of the expected volatility, expected dividend yield and the expected lives of the options. The risk-free interest rate was selected based upon yields of United States Treasury issues with terms equal to the expected life of the option being valued.

The weighted average grant date fair value of stock options granted during 2020, 2019 and 2018 was $38.57, $31.74 and $31.42, respectively.

The total intrinsic value of options exercised during 2020, 2019 and 2018 was $65,783, $31,881 and $35,696, respectively.

Cash received from the exercise of stock options for 2020, 2019 and 2018 was $50,853, $26,020 and $18,811, respectively.

Restricted shares and restricted share units — We may grant restricted shares and/or restricted share units to our employees and directors. These shares or units may not be transferred for a designated period of time (generally one to three years) defined at the date of grant**.**

For employee recipients, in the event of termination of employment due to early retirement, with consent of the Company, restricted shares granted within 12 months prior to termination are forfeited, and other restricted shares vest on a pro-rata basis. In the event of termination of employment due to normal retirement at age 65, restricted shares granted within 12 months prior to termination are forfeited, and, for other restricted shares, the restriction period will lapse and the shares will vest and be transferable. For restricted shares granted within 12 months prior to termination (or at any time prior to December 28, 2017), the restrictions lapse in the event of a recipient's disability or death. Termination for any other reason prior to the lapse of any restrictions results in forfeiture of the shares.

For non-employee directors, all restrictions lapse in the event of disability or death. Termination of service as a director for any other reason within one year of date of grant results in a pro-rata vesting of shares or units.

As shares or units are issued, deferred stock-based compensation equivalent to the fair market value on the date of grant is expensed over the vesting period.

The following table summarizes activity related to restricted shares during 2020:

	Number of Shares	Weighted-Average Grant Date Fair Value Per Share
Restricted at October 31, 2019	66	$ 126.83
Granted	27	$ 170.94
Forfeited	(7)	$ 135.43
Vested	(28)	$ 121.01
Restricted at October 31, 2020	58	$ 148.75

As of October 31, 2020, there was $4,292 of unrecognized compensation cost related to restricted shares. The cost is expected to be amortized over a weighted average period of 2.0 years. The amount charged to expense related to restricted shares was $3,956, $3,608 and $2,610 in 2020, 2019 and 2018, respectively. These amounts included common share dividends of $87, $84, and $70 in 2020, 2019 and 2018, respectively.

The following table summarizes activity related to restricted share units in 2020:

	Number of Units	Weighted-Average Grant Date Fair Value
Restricted share units at October 31, 2019	—	$ —
Granted	7	$ 160.68
Vested	(7)	$ 160.68
Restricted share units at October 31, 2020	—	$ —

As of October 31, 2020, there was no remaining expense to be recognized related to outstanding restricted share units. The amounts charged to expense related to restricted share units in 2020, 2019 and 2018 were $1,181, $1,052 and $1,011, respectively.

Performance share incentive awards — Executive officers and selected other key employees are eligible to receive common share-based incentive awards. Payouts, in the form of unrestricted common shares, vary based on the degree to which corporate financial performance exceeds predetermined threshold, target and maximum performance goals over three-year performance periods. No payout will occur unless threshold performance is achieved**.**

The amount of compensation expense is based upon current performance projections for each three-year period and the percentage of the requisite service that has been rendered. The calculations are also based upon the grant date fair value determined using the closing market price of our common shares at the grant date, reduced by the implied value of dividends not to be paid. The per share values were $160.02, $133.01, and $184.04 for 2020; $120.12 and $138.53 for 2019; and $123.45 and $138.53 for 2018. The amount credited to expense for executive officers and selected other key employees in 2020 was $2,732, and the amounts charged to expense in 2019 and 2018 were $2,989 and $7,635, respectively. The cumulative amount recorded in shareholders' equity at October 31, 2020, and 2019 was $1,557 and $10,459, respectively.

Deferred compensation — Our executive officers and other highly compensated employees may elect to defer up to 100 percent of their base pay and cash incentive compensation and, for executive officers, up to 90 percent of their share-based performance incentive award payout each year. Additional share units are credited for quarterly dividends paid on our common shares. Expense related to dividends paid under this plan was $276, $300 and $273 for 2020, 2019 and 2018, respectively.

Deferred directors' compensation — Non-employee directors may defer all or part of their cash and equity-based compensation until retirement. Cash compensation may be deferred as cash or as share equivalent units. Deferred cash amounts are recorded as liabilities, and share equivalent units are recorded as equity. Additional share equivalent units are earned when common share dividends are declared.

The following table summarizes activity related to director deferred compensation share equivalent units during 2020:

	Number of Shares	Weighted-Average Grant Date Fair Value Per Share
Outstanding at October 31, 2019	114	$ 55.52
Restricted stock units vested	5	$ 161.09
Dividend equivalents	1	$ 169.43
Outstanding at October 31, 2020	120	$ 60.81

The amount charged to expense related to director deferred compensation was $175, $154 and $127 in 2020, 2019 and 2018, respectively.

Shares reserved for future issuance — At October 31, 2020, there were 2,032 of common shares reserved for future issuance through the exercise of outstanding options or rights.

Note 16 — Operating segments and geographic area data

We conduct business in two primary operating segments: Industrial Precision Solutions and Advanced Technology Solutions. The composition of segments and measure of segment profitability is consistent with that used by our chief operating decision maker. The primary measure used by the chief operating decision maker for purposes of making decisions about allocating resources to the segments and assessing performance is operating profit, which equals sales less cost of sales and certain operating expenses. Items below the operating profit line of the Consolidated Statement of Income (interest and investment income, interest expense and other income/expense) are excluded from the measure of segment profitability reviewed by our chief operating decision maker and are not presented by operating segment. The accounting policies of the segments are generally the same as those described in Note 1, Significant Accounting Policies.

Effective in the second quarter of 2020, we made changes to realign our management team and our operating segments. This realignment will enable us to better serve global customers and markets, to more efficiently leverage technology synergies, to operate divisions of significant size in a consistent and focused way and to position ourselves for our next chapter of profitable growth. The revised operating segments better reflect how we manage the Company, allocate resources, and assess performance of the businesses.

We realigned our former three operating segments into two: Industrial Precision Solutions and Advanced Technology Solutions. Existing product lines were unchanged as part of this new structure.

Industrial Precision Solutions: This segment combines our former Adhesive Dispensing Systems (ADS) and Industrial Coating Systems (ICS) businesses. IPS enhances the technology synergies between ADS and ICS to deliver proprietary dispensing and processing technology to diverse end markets. Product lines reduce material consumption, increase line efficiency and enhance product brand and appearance. Components are used for dispensing adhesives, coatings, paint, finishes, sealants and other materials. This segment primarily serves the industrial, consumer durables and non-durables markets.

Advanced Technology Solutions: This segment integrates our proprietary product technologies found in progressive stages of a customer's production processes, such as surface treatment, precisely controlled dispensing of material and post-dispense test and inspection to ensure quality. Related single-use plastic molded syringes, cartridges, tips, fluid connection components, tubing, balloons and catheters are used to dispense or control fluids in production processes or within customers' end products. This segment predominantly serves customers in the electronics, medical and related high-tech industrial markets.

The financial information presented herein reflects the impact of the preceding changes and prior periods have been revised to reflect these changes.

No single customer accounted for 10 percent or more of sales in 2020, 2019 or 2018.

The following table presents information about our reportable segments:

	Industrial Precision Solutions	Advanced Technology Solutions	Corporate	Total
Year ended October 31, 2020				
Net external sales	**$ 1,143,423**	**$ 977,677**	$ —	**$ 2,121,100**
Depreciation and amortization	**38,939**	**64,543**	**9,820**	**113,302**
Operating profit (loss)	**208,028**	**191,602**	**(50,085)**	**349,545**
Identifiable assets [b]	**882,946**	**1,849,391**	**948,048** [a]	**3,680,385**
Property, plant and equipment expenditures	**18,798**	**31,737**	**—**	**50,535**
Year ended October 31, 2019				
Net external sales	$ 1,208,376	$ 985,850	$ —	$ 2,194,226
Depreciation and amortization	38,333	62,836	9,075	110,244
Operating profit (loss)	329,054	205,609	(51,550)	483,113
Identifiable assets [b]	997,460	1,740,259	782,188 [a]	3,519,907
Property, plant and equipment expenditures	30,400	26,010	7,834	64,244
Year ended October 31, 2018				
Net external sales	$ 1,215,302	$ 1,039,366	$ —	$ 2,254,668
Depreciation and amortization	37,763	62,594	8,050	108,407
Operating profit (loss)	315,048	244,880	(57,349)	502,579
Identifiable assets [b]	951,784	1,713,404	763,734 [a]	3,428,922
Property, plant and equipment expenditures	55,457	16,205	18,128	89,790

(a) Corporate assets are principally cash and cash equivalents, deferred income taxes, leases, headquarter facilities, the major portion of our enterprise management system, and intangible assets. Includes assets held for sale, see Note 4.

(b) Operating segment identifiable assets include notes and accounts receivable net of customer advance payments and allowance for doubtful accounts, inventories net of reserves, property, plant and equipment net of accumulated depreciation and goodwill.

We have significant sales and long-lived assets in the following geographic areas:

	2020	2019	2018
Net external sales			
United States	**$ 755,642**	$ 758,383	$ 720,832
Americas	**141,473**	167,661	158,837
Europe	**536,636**	571,596	622,108
Japan	**126,601**	126,756	161,771
Asia Pacific	**560,748**	569,830	591,120
Total net external sales	**$ 2,121,100**	$ 2,194,226	$ 2,254,668
Long-lived assets			
United States	**$ 329,390**	$ 286,894	$ 279,437
Americas	**2,307**	1,948	2,158
Europe	**69,854**	44,041	41,663
Japan	**22,733**	6,169	5,492
Asia Pacific	**56,459**	59,843	57,916
Total long-lived assets	**$ 480,743**	$ 398,895	$ 386,666

Long-lived assets includes property, plant and equipment - net and operating right of use lease assets, which were recorded as a result of the new lease standard as codified in ASC 842 and excludes amounts held for sale, see Note 4. The increase in 2020 was driven primarily by the recording of the operating right of use lease assets.

A reconciliation of total segment operating profit to total consolidated income before income taxes is as follows:

	2020	2019	2018
Total profit for reportable segments	**$ 349,545**	$ 483,113	$ 502,579
Interest expense	**(32,160)**	(47,145)	(49,576)
Interest and investment income	**1,681**	1,844	1,384
Other-net	**(17,577)**	(6,708)	(5,868)
Income before income taxes	**$ 301,489**	$ 431,104	$ 448,519

A reconciliation of total assets for reportable segments to total consolidated assets is as follows:

	2020	2019	2018
Total assets for reportable segments	**$ 3,680,385**	$ 3,519,907	$ 3,428,922
Customer advance payments	**42,323**	41,131	38,997
Eliminations	**(48,052)**	(44,591)	(46,907)
Total consolidated assets	**$ 3,674,656**	$ 3,516,447	$ 3,421,012

Note 17 — Supplemental information for the statement of cash flows

	2020	2019	2018
Cash operating activities:			
Interest paid	**$ 31,095**	$ 50,578	$ 42,305
Income taxes paid	**80,849**	104,326	87,879

Note 18 — Quarterly financial data (unaudited)

	First	Second	Third	Fourth
2020:				
Sales	**$ 494,916**	**$ 529,478**	**$ 538,181**	**$ 558,525**
Gross margin	**263,194**	**289,598**	**280,808**	**296,868**
Net income	**52,004**	**92,079**	**86,981**	**18,475**
Earnings per share:				
Basic	**0.90**	**1.60**	**1.51**	**0.32**
Diluted	**0.89**	**1.58**	**1.49**	**0.31**
2019:				
Sales	$ 497,910	$ 551,119	$ 559,746	$ 585,451
Gross margin	268,976	301,529	302,623	318,975
Net income	48,567	91,923	93,928	102,673
Earnings per share:				
Basic	0.84	1.60	1.64	1.79
Diluted	0.83	1.58	1.62	1.76

The sum of the per-share amounts for the four quarters may not always equal the annual per-share amounts due to differences in the average number of shares outstanding during the respective periods. The sum of other amounts for the four quarters may not always equal the annual amounts due to rounding.

During the fourth quarter of 2020, we recorded a non-cash, assets held for sale impairment charge of $87,371 related to the disposal of our screws and barrels product line. Refer to Note 4 for additional information.

During the first quarter of 2019, we recorded a discrete tax expense of $4,866 related to the Act. Refer to Note 8 for additional information.

Note 19 — Contingencies

We are involved in pending or potential litigation regarding environmental, product liability, patent, contract, employee and other matters arising from the normal course of business. Including the litigation and environmental matters discussed below, after consultation with legal counsel, we do not believe that losses in excess of the amounts we have accrued would have a material adverse effect on our financial condition, quarterly or annual operating results or cash flows.

Class Action Litigation

On February 22, 2019, a former employee, Mr. Ortiz, filed a purported class action lawsuit in the San Diego County Superior Court, California, against Nordson Asymtek, Inc. and Nordson Corporation, alleging various violations of the California Labor Code. Plaintiff seeks, among other things, an unspecified amount for unpaid wages, actual, consequential and incidental losses, penalties, and attorneys' fees and costs. Following mediation in June 2020, the parties agreed to settle the lawsuit, subject to the execution of a written settlement agreement and court approval. If the court approves of the settlement on the agreed upon terms, the class action lawsuit will be resolved. Management believes, based on currently available information, that the ultimate outcome of the proceeding described above will not have a material adverse effect on the Company's financial condition or results of operations.

Environmental

We have voluntarily agreed with the City of New Richmond, Wisconsin and other Potentially Responsible Parties to share costs associated with the remediation of the City of New Richmond municipal landfill (the "Site") and the construction of a potable water delivery system serving the impacted area down gradient of the Site. At October 31, 2020 and October 31, 2019, our accrual for the ongoing operation, maintenance and monitoring obligation at the Site was \$360 and \$401, respectively. The liability for environmental remediation represents management's best estimate of the probable and reasonably estimable undiscounted costs related to known remediation obligations. The accuracy of our estimate of environmental liability is affected by several uncertainties such as additional requirements that may be identified in connection with remedial activities, the complexity and evolution of environmental laws and regulations, and the identification of presently unknown remediation requirements. Consequently, our liability could be greater than our current estimate. However, we do not expect that the costs associated with remediation will have a material adverse effect on our financial condition or results of operations.

Management's Report on Internal Control Over Financial Reporting

The management of Nordson Corporation is responsible for establishing and maintaining adequate internal control over financial reporting.

Using criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in Internal Control-Integrated Framework (2013 framework), Nordson's management assessed the effectiveness of our internal control over financial reporting as of October 31, 2020.

We completed the acquisitions of Fluortek, Inc. ("Fluortek") and vivaMOS Ltd. ("vivaMOS") on June 1, 2020, and September 1, 2020, respectively. As permitted by SEC guidance, the scope of our evaluation of internal control over financial reporting as of October 31, 2020 did not include the internal control over financial reporting of Fluortek and vivaMOS. The results of Fluortek and vivaMOS are included in our consolidated financial statements from the date each business was acquired. The combined total assets of Fluortek and vivaMOS represented four percent of our total assets at October 31, 2020. The combined sales and net income of Fluortek and vivaMOS represented less than one percent of our consolidated sales and less than one percent of our net income for 2020.

Based on our assessment, management concluded that our internal control over financial reporting was effective as of October 31, 2020.

The independent registered public accounting firm, Ernst & Young LLP, has also audited the effectiveness of our internal control over financial reporting as of October 31, 2020. Their report is included herein.

/s/ Sundaram Nagarajan	/s/ Joseph P. Kelley
President and Chief Executive Officer	Executive Vice President, Chief Financial Officer
December 18, 2020	December 18, 2020

Report of Independent Registered Public Accounting Firm

To the Shareholders and the Board of Directors of Nordson Corporation

Opinion on Internal Control over Financial Reporting

We have audited Nordson Corporation's internal control over financial reporting as of October 31, 2020, based on criteria established in Internal Control — Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria). In our opinion, Nordson Corporation (the Company) maintained, in all material respects, effective internal control over financial reporting as of October 31, 2020, based on the COSO criteria.

As indicated in the accompanying Management's Report on Internal Control Over Financial Reporting, management's assessment of and conclusion on the effectiveness of internal control over financial reporting did not include the internal controls of Fluortek Inc. and vivaMOS Ltd., which are included in the 2020 consolidated financial statements of the Company and constituted a combined four percent of total assets as of October 31, 2020 and less than one percent of consolidated sales and consolidated net income for the year then ended. Our audit of internal control over financial reporting of the Company also did not include an evaluation of the internal control over financial reporting of Fluortek Inc. and vivaMOS Ltd.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of the Company as of October 31, 2020 and 2019, the related consolidated statements of income, comprehensive income, shareholders' equity and cash flows, for each of the three years in the period ended October 31, 2020, and the related notes and financial statement schedule listed in the Index at Item 15(a) and our report dated December 18, 2020 expressed an unqualified opinion thereon.

Basis for Opinion

The Company's management is responsible 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 the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the 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 audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects.

Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

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.

/s/ Ernst & Young LLP

Cleveland, Ohio
December 18, 2020

Report of Independent Registered Public Accounting Firm

To the Shareholders and the Board of Directors of Nordson Corporation

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Nordson Corporation (the Company) as of October 31, 2020 and 2019, the related consolidated statements of income, comprehensive income, shareholders' equity and cash flows for each of the three years in the period ended October 31, 2020, and the related notes and financial statement schedule listed in the Index at Item 15(a) (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at October 31, 2020 and 2019, and the results of its operations and its cash flows for each of the three years in the period ended October 31, 2020, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of October 31, 2020, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) and our report dated December 18, 2020 expressed an unqualified opinion thereon.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the 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 audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the 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. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matter

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 the critical audit matter does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matter below, providing a separate opinion on the critical audit matter or on the account or disclosure to which it relates.

Valuation of Goodwill

Description of the Matter	At October 31, 2020, the Company had $1,713,354 thousand of goodwill. As discussed in Note 6 to the consolidated financial statements, the Company evaluates the carrying amount of goodwill for impairment annually as of August 1, and between annual evaluations if an event occurs or circumstances change that would indicate the fair value of a reporting unit is less than the carrying amount of those assets. The Company performed a quantitative impairment test for all reporting units in fiscal 2020. As part of the quantitative impairment test, the Company estimated the fair value of each reporting unit using a combination of valuation techniques including the discounted cash flow method, a form of the income approach, and the guideline public company method, a form of the market approach. Auditing management's annual goodwill impairment assessment relating to goodwill was complex due to the use of valuation methodologies in the determination of the estimated fair values of the reporting units. These fair value estimates are impacted by assumptions such as the selection of comparable guideline companies and the related valuation multiples, as well as discount rates, revenue growth rates, and operating margins which are affected by expectations about future market or economic conditions.
How We Addressed the Matter in Our Audit	We obtained an understanding, evaluated the design and tested the operating effectiveness of controls over the Company's goodwill impairment process whereby the Company develops assumptions that are used as inputs to the annual goodwill impairment test. This included controls over management's review of the valuation models and the assumptions, described above. To test the implied fair value of the Company's reporting units, we performed audit procedures that included, among others, assessing the valuation methodologies, testing the assumptions, and testing the completeness and accuracy of the underlying data. We involved our internal valuation specialists in assessing the fair value methodologies applied and evaluating the reasonableness of certain assumptions selected by management. We assessed the historical accuracy of management's estimates and performed sensitivity analyses of assumptions to evaluate the changes in the fair value of the reporting units that would result from changes in the assumptions. We tested management's reconciliation of the fair value of the reporting units to the market capitalization of the Company. We also assessed the appropriateness of the disclosures in the consolidated financial statements.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 1956.

Cleveland, Ohio
December 18, 2020

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

None.

Item 9A. Controls and Procedures

(a) Evaluation of disclosure controls and procedures. Our management, with the participation of the principal executive officer (president and chief executive officer) and the principal financial officer (executive vice president and chief financial officer), has reviewed and evaluated our disclosure controls and procedures (as defined in the Securities Exchange Act Rule 13a-15e) as of October 31, 2020. Based on that evaluation, our management, including the principal executive and financial officers, has concluded that our disclosure controls and procedures were effective as of October 31, 2020 in ensuring that information required to be disclosed in the reports that we file or submit under the Securities Exchange Act of 1934 is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms and is accumulated and communicated to our management, including the principal executive officer and the principal financial officer, as appropriate to allow timely decisions regarding required disclosure.

(b) Management's report on internal control over financial reporting. The Report of Management on Internal Control over Financial Reporting and the Report of Independent Registered Public Accounting Firm thereon are set forth in Part II, Item 8 of this Annual Report on Form 10-K.

(c) Changes in internal control over reporting. There were no changes in our internal controls over financial reporting that occurred during the fourth quarter of 2020 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. Other Information

None.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

The information required by this Item is incorporated by reference to the captions “Proposal 1: Election of Directors Whose Terms Expire in 2024” and "Security Ownership of Nordson Common Shares by Directors, Director Nominees, Executive Officers, and Large Beneficial Owners—Delinquent Section 16(a) Reports” of our definitive Proxy Statement for the 2021 Annual Meeting of Shareholders. Information regarding the Audit Committee and Audit Committee financial experts is incorporated by reference to the caption “Committees of the Board of Directors” of our definitive Proxy Statement for the 2021 Annual Meeting of Shareholders.

Our executive officers serve for a term of one year from date of election to the next organizational meeting of the board of directors and until their respective successors are elected and qualified, except in the case of death, resignation or removal. Information concerning executive officers is contained in Part I of this report under the caption “Information about Our Executive Officers.”

We have adopted a code of ethics and business conduct for all employees and directors, including the principal executive officer, other executive officers, principal financial officer and other finance personnel. A copy of the code of ethics is available free of charge on our Web site at http://www.nordson.com/en/our-company/corporate-governance. We intend to satisfy our disclosure requirement under Item 5.05 of Form 8-K regarding any amendment to or waiver of a provision of our code of ethics and business conduct that applies to our principal executive officer, principal financial officer, principal accounting officer or controller or persons performing similar functions and that relates to any element of the code of ethics definition enumerated in Item 406(b) of Regulation S-K by posting such information on our Web site.

Item 11. Executive Compensation

The information required by this Item is incorporated by reference to the “Executive Compensation Discussion and Analysis” section of the definitive Proxy Statement for the 2021 Annual Meeting of Shareholders, along with the sections captioned “Directors Compensation,” “Summary Compensation for Fiscal Year 2020,” “Grants of Plan-Based Awards,” “Outstanding Equity Awards at October 31, 2020,” “Stock Option Exercises and Stock Vested Tables,” “Pension Benefits,” “Nonqualified Deferred Compensation,” “Potential Benefits Upon Termination or Change of Control,” “CEO Pay Ratio,” "Risks Related to Executive Compensation Policies and Practices," "Compensation Committee Report" and "Compensation Committee Interlocks and Insider Participation" in our definitive Proxy Statement for the 2021 Annual Meeting of Shareholders.

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

The information required by this Item is incorporated by reference to the caption “Security Ownership of Nordson Common Shares by Directors, Director Nominees, Executive Officers and Large Beneficial Owners” in our definitive Proxy Statement for the 2021 Annual Meeting of Shareholders.

Equity Compensation Table

The following table sets forth information regarding equity compensation plans in effect as of October 31, 2020:

Plan category	Number of securities to be issued upon exercise of outstanding options, warrants and rights	Weighted-average exercise price of outstanding options, warrants and rights	Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in first reporting column)
Equity compensation plans approved by security holders	1,787	$ 97.74	1,888
Equity compensation plans not approved by security holders	—	—	—
Total	1,787	$ 97.74	1,888

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

The information required by this Item is incorporated by reference to the captions “Corporate Governance—Director Independence” and “Corporate Governance—Review of Transactions with Related Persons” in our definitive Proxy Statement for the 2021 Annual Meeting of Shareholders.

Item 14. Principal Accountant Fees and Services

The information required by this Item is incorporated by reference to the caption “Proposal 2: Ratify the Appointment of Independent Registered Public Accounting Firm—Fees Paid to Ernst & Young LLP” and the caption “Proposal 2: Ratify the Appointment of Independent Registered Public Accounting Firm—Pre-Approval of Audit and Non-Audit Services” in our definitive Proxy Statement for the 2021 Annual Meeting of Shareholders.

PART IV

Item 15. Exhibits and Financial Statement Schedules

The following are filed as part of this report:

(a) 1. Financial Statements

The following financial statements are included in Part II, Item 8:

Consolidated Statements of Income for each of the three years in the period ended October 31, 2020

Consolidated Statements of Comprehensive Income for each of the three years in the period ended October 31, 2020

Consolidated Balance Sheets as of October 31, 2020 and October 31, 2019

Consolidated Statements of Shareholders' Equity for each of the three years in the period ended October 31, 2020

Consolidated Statements of Cash Flows for each of the three years in the period ended October 31, 2020

Notes to Consolidated Financial Statements

Reports of Independent Registered Public Accounting Firm

(a) 2. Financial Statement Schedule

Schedule II Valuation and Qualifying Accounts and Reserves for each of the three years in the period ended October 31, 2020.

No other consolidated financial statement schedules are presented because the schedules are not required, because the required information is not present or not present in amounts sufficient to require submission of the schedule, or because the information required is included in the financial statements, including the notes thereto.

(a) 3. Exhibits

The exhibits listed on the accompanying index to exhibits are filed as part of this Annual Report on Form 10-K.

NORDSON CORPORATION
Index to Exhibits

Exhibit Number	Description
(2)	Plan of Acquisition, Reorganization or Arrangement
2-a	Agreement and Plan of Merger, dated as of February 20, 2017, by and among Nordson Corporation, Viking Merger Corp., Vention Medical Holdings, Inc. and VMHI Rep Services, LLC (incorporated herein by reference to Exhibit 2.1 to Registrant's Form 8-K dated April 5, 2017)**
2-b	First Amendment to Agreement and Plan of Merger, dated as of March 30, 2017, by and among Nordson Corporation, Viking Merger Corp., Vention Medical Holdings, Inc. and VMHI Rep Services, LLC (incorporated herein by reference to Exhibit 2.2 to Registrant's Form 8-K dated April 5, 2017)
(3)	Articles of Incorporation and By-Laws
3-a	1989 Amended Articles of Incorporation (incorporated herein by reference to Exhibit 3-a to Registrant's Annual Report on Form 10-K for the year ended October 31, 2017)
3-a-1	Certificate of Amendment to 1989 Amended Articles of Incorporation (incorporated herein by reference to Exhibit 3-a-1 to Registrant's Annual Report on Form 10-K for the year ended October 31, 2017)
3-b	1998 Amended Regulations (incorporated herein by reference to Exhibit 3-b to Registrant's Annual Report on Form 10-K for the year ended October 31, 2016)
(4)	Instruments Defining the Rights of Security Holders, including indentures
4-a	Description of Nordson Corporation's Securities Registered Pursuant to Section 12 of the Securities Exchange Act of 1934 (incorporated herein by reference to Exhibit 4-a to Registrant's Annual Report on Form 10-K for the year ended October 31, 2019)
4-e	Master Note Purchase Agreement dated July 26, 2012 between Nordson Corporation and the purchasers listed therein (incorporated herein by reference to Exhibit 4-e to Registrant's Annual Report on Form 10-K for the year ended October 31, 2018).
4-h	Third Amended and Restated Credit Agreement dated April 30, 2019, among Nordson Corporation, various financial institutions named therein, and KeyBank, National Association, as administrative agent (incorporated herein by reference to Exhibit 4.1 to Registrant's Form 8-K dated May 6, 2019)**
4-j	Master Note Purchase Agreement dated July 28, 2015 between Nordson Corporation and the purchasers listed therein (incorporated herein by reference to Exhibit 4.1 to Registrant's Quarterly Report on Form 10-Q for the quarter ended July 31, 2015)
4-k	Amended and Restated Term Loan Agreement, dated April 30, 2019, among Nordson Corporation, various financial institutions named therein, and PNC Bank, National Association, as administrative agent (incorporated herein by reference to Exhibit 4.2 to Registrant's Form 8-K dated May 6, 2019)**
4-l	Master Note Purchase Agreement, dated as of June 22, 2018, by and among Nordson Corporation and the purchasers named therein (incorporated herein by reference to Exhibit 4.1 to Registrant's Form 8-K dated June 28, 2018)
4-m	Amended and Restated Note Purchase Agreement and Private Shelf Agreement for $200 million, dated October 29, 2020 between Nordson Corporation and New York Life Investment Management LLC
(10)	Material Contracts
10-b-2	Nordson Corporation 2005 Deferred Compensation Plan (as Amended and Restated Effective January 1, 2009) (incorporated herein by reference to Exhibit 10-b-2 to Registrant's Annual Report on Form 10-K for the year ended October 31, 2014)*
10-b-3	First Amendment to the Nordson Corporation 2005 Deferred Compensation Plan (as Amended and Restated Effective January 1, 2009) (incorporated herein by reference to Exhibit 10.1 to Registrant's Quarterly Report on Form 10-Q for the quarter ended April 30, 2016)*
10-c-1	Form of Indemnity Agreement between the Registrant and Directors, effective November 1, 2016 (incorporated herein by reference to Exhibit 10-c-1 to Registrant's Annual Report on Form 10-K for the year ended October 31, 2016)*
10-c-2	Form of Indemnity Agreement between the Registrant and Executive Officers, effective November 1, 2016 (incorporated herein by reference to Exhibit 10-c-2 to Registrant's Annual Report on Form 10-K for the year ended October 31, 2016)*
10-d	Restated Nordson Corporation Excess Defined Contribution Retirement Plan (incorporated herein by reference to Exhibit 10-d to Registrant's Annual Report on Form 10-K for the year ended October 31, 2009)*
10-d-1	First Amendment to Restated Nordson Corporation Excess Defined Contribution Retirement Plan (incorporated herein by reference to Exhibit 10-d-1 to Registrant's Annual Report on Form 10-K for the year ended October 31, 2018)*
10-d-3	Nordson Corporation 2005 Excess Defined Contribution Retirement Plan (as Amended and Restated Effective January 1, 2009) (incorporated herein by reference to Exhibit 10-d-3 to Registrant's Annual Report on Form 10-K for the year ended October 31, 2014)*

NORDSON CORPORATION
Index to Exhibits

Exhibit Number	Description
10-e	Nordson Corporation Excess Defined Benefit Pension Plan (incorporated herein by reference to Exhibit 10-e to Registrant's Annual Report on Form 10-K for the year ended October 31, 2009)*
10-e-1	First Amendment to Nordson Corporation Excess Defined Benefit Pension Plan (incorporated herein by reference to Exhibit 10-f-1 to Registrant's Annual Report on Form 10-K for the year ended October 29, 2000)*
10-e-2	Second Amendment to Nordson Corporation Excess Defined Benefit Pension Plan (incorporated herein by reference to Exhibit 10-e-1 to Registrant's Annual Report on Form 10-K for the year ended October 31, 2018)*
10-e-3	Nordson Corporation 2005 Excess Defined Benefit Pension Plan (as Amended and Restated Effective January 1, 2009) (incorporated herein by reference to Exhibit 10-e-3 to Registrant's Annual Report on Form 10-K for the year ended October 31, 2014)*
10-g-1	Amended and Restated Nordson Corporation 2004 Long-Term Performance Plan (incorporated herein by reference to Exhibit 10-g-1 to Registrant's Annual Report on Form 10-K for the year ended October 31, 2013)*
10-g-2	Nordson Corporation Amended and Restated 2012 Stock Incentive and Award Plan (incorporated herein by reference to Exhibit 10.1 to Registrant's Form 8-K dated March 2, 2018)*
10-g-3	Nordson Corporation 2012 Stock Incentive and Award Plan, Form of Notice of Award - Key Employees (as amended November 24, 2014) (incorporated herein by reference to Exhibit 10-g-3 to Registrant's Annual Report on Form 10-K for the year ended October 31, 2014)*
10-g-4	Nordson Corporation 2012 Stock Incentive and Award Plan, Form of Notice of Award - Executive Officers (as amended November 24, 2014) (incorporated herein by reference to Exhibit 10-g-4 to Registrant's Annual Report on Form 10-K for the year ended October 31, 2014)*
10-g-5	Nordson Corporation 2012 Stock Incentive and Award Plan, Directors' Deferred Compensation Sub-Plan (incorporated herein by reference to Exhibit 10-g-5 to Registrant's Annual Report on Form 10-K for the year ended October 31, 2013)*
10-g-6	Nordson Corporation 2012 Stock Incentive and Award Plan, Directors' Deferred Compensation Sub-Plan, Form of Notice of Award (incorporated herein by reference to Exhibit 10-g-6 to Registrant's Annual Report on Form 10-K for the year ended October 31, 2013)*
10-g-7	Amended and Restated Nordson Corporation Directors' Deferred Compensation Sub-Plan (incorporated herein by reference to Exhibit 10-g-7 to Registrant's Annual Report on Form 10-K for the year ended October 31, 2017)*
10-h	Assurance Trust Agreement between Nordson Corporation and Key Trust Company of Ohio, N.A. amended and restated as of January 22, 2014 (incorporated herein by reference to Exhibit 10.1 to Registrant's Quarterly Report on Form 10-Q for the quarter ended January 31, 2014)*
10-i	Form of Change in Control Retention Agreement between the Registrant and Executive Officers (incorporated herein by reference to Exhibit 10-h-1 to Registrant's Annual Report on Form 10-K for the year ended October 31, 2014)*
10-j	Compensation Committee Rules of the Nordson Corporation Amended and Restated Nordson Corporation 2004 Long Term Performance Plan governing directors' deferred compensation (incorporated herein by reference to Exhibit 10-j to Registrant's Annual Report on Form 10-K for the year ended October 31, 2016)*
10-k	Employment Agreement, effective as of August 1, 2019, between Nordson Corporation and Sundaram Nagarajan (incorporated herein by reference to Exhibit 10.2 to Registrant's Form 8-K dated June 14, 2019)*
10-l	Change-in-Control Retention Agreement between Nordson Corporation and Sundaram Nagarajan (incorporated herein by reference to Exhibit 10.3 to Registrant's Form 8-K dated June 14, 2019)*
(21)	Subsidiaries of the Registrant
(23)	Consent of Independent Registered Public Accounting Firm
(24)	Power of Attorney (included on the signature page to this Annual Report on Form 10-K)
31.1	Certification pursuant to Rule 13a-14(a)/15d-14(a) of the Securities Exchange Act of 1934 by the Chief Executive Officer, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
31.2	Certification pursuant to Rule 13a-14(a)/15d-14(a) of the Securities Exchange Act of 1934 by the Chief Financial Officer, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002
32.1	Certification of CEO pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (furnished herewith)
32.2	Certification of CFO pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (furnished herewith)
99-a	Form S-8 Undertakings (incorporated herein by reference to Exhibit 99-a to Registrant's Annual Report on Form 10-K for the year ended October 31, 2016)

Exhibit Number	Description
101	The following financial information from Nordson Corporation's Annual Report on Form 10-K for the year ended October 31, 2020, formatted in inline Extensible Business Reporting Language (iXBRL): (i) the Consolidated Statements of Income for the years ended October 31, 2020, 2019 and 2018, (ii) the Consolidated Statements of Comprehensive Income for the years ended October 31, 2020, 2019 and 2018, (iii) the Consolidated Balance Sheets at October 31, 2020 and 2019, (iv) the Consolidated Statements of Changes in Shareholders' Equity for the years ended October 31, 2020, 2019 and 2018, (v) the Consolidated Statements of Cash Flows for the years ended October 31, 2020, 2019 and 2018, and (vi) the Notes to Consolidated Financial Statements.
104	The cover page from Nordson Corporation's Annual Report on Form 10-K for the year ended October 31, 2020, formatted in inline Extensible Business Reporting Language (iXBRL) (included in Exhibit 101).

* Indicates management contract or compensatory plan, contract or arrangement in which one or more directors and/or executive officers of Nordson Corporation may be participants.

** Schedules and attachments to this exhibit have been omitted pursuant to Regulation S-K, Item 601(a)(5). The Registrant will provide a copy of any omitted schedule to the Securities and Exchange Commission or its staff upon request.

Item 16. Form 10-K Summary

None.

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.

NORDSON CORPORATION

Date: December 18, 2020

By: /s/ Joseph P. Kelley

Joseph P. Kelley

Executive Vice President, Chief Financial Officer

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS, that each person whose signature appears below hereby constitutes and appoints Joseph P. Kelley as his or her true and lawful attorney-in-fact and agent with full power to act alone, for him or her and in his or her name, place and stead, in any and all capacities, to sign any and all amendments to this Annual Report on Form 10-K, and to file the same, with all exhibits thereto, and all 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 might or could do in person, hereby ratifying and confirming all that said attorney-in-fact and agent, may lawfully do or cause to be done by virtue hereof.

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.

Signatures	Title	Date
/s/ Sundaram Nagarajan Sundaram Nagarajan	Director, President and Chief Executive Officer (Principal Executive Officer)	December 18, 2020
/s/ Joseph P. Kelley Joseph P. Kelley	Executive Vice President, Chief Financial Officer (Principal Financial Officer) (Principal Accounting Officer)	December 18, 2020
/s/ Michael J. Merriman, Jr. Michael J. Merriman, Jr.	Chair of the Board	December 18, 2020
/s/ Dr. John A. DeFord Dr. John A. DeFord	Director	December 18, 2020
/s/ Arthur L. George, Jr. Arthur L. George, Jr.	Director	December 18, 2020
/s/ Frank M. Jaehnert Frank M. Jaehnert	Director	December 18, 2020
/s/ Ginger M. Jones Ginger M. Jones	Director	December 18, 2020
/s/ Jennifer A. Parmentier Jennifer A. Parmentier	Director	December 18, 2020
/s/ Mary G. Puma Mary G. Puma	Director	December 18, 2020
/s/ Victor L. Richey, Jr. Victor L. Richey, Jr.	Director	December 18, 2020

Schedule II – Valuation and Qualifying Accounts and Reserves

	Balance at Beginning of Year	Charged to Expense	Deductions	Currency Effects	Balance at End of Year
Allowance for Doubtful Accounts					
2018	$ 9,791	1,185	1,189	(207)	$ 9,580
2019	$ 9,580	2,254	1,840	(193)	$ 9,801
2020	**$ 9,801**	**2,165**	**3,074**	**153**	**$ 9,045**
Inventory Obsolescence and Other Reserves					
2018	$ 33,140	13,041	8,930	294	$ 37,545
2019	$ 37,545	10,623	8,720	(71)	$ 39,377
2020	**$ 39,377**	**24,767**	**23,255**	**426**	**$ 41,315**

Exhibit 21
NORDSON CORPORATION
Subsidiaries of the Registrant

The following table sets forth the subsidiaries of the Registrant (each of which is included in the Registrant's consolidated financial statements), and the jurisdiction under the laws of which each subsidiary was organized:

Name	Jurisdiction of Incorporation
UNITED STATES:	
Nordson DAGE, Inc.	California
Nordson MARCH, Inc.	California
Nordson SELECT, Inc.	California
Nordson YESTECH, Inc.	California
Value Plastics, Inc. dba Nordson MEDICAL	Colorado
Avalon Laboratories Holding Corp.	Delaware
EDI Holdings, Inc.	Delaware
Nordson Extrusion Dies Industries, LLC	Delaware
Nordson MEDICAL (CA), LLC	Delaware
Nordson MEDICAL Design and Development, Inc.	Delaware
Nordson MEDICAL, Inc.	Delaware
Nordson Xaloy Incorporated	Delaware
Sonoscan, Inc.	Delaware
Vention Medical Acquisition Co.	Delaware
VP Acquisition Holdings, Inc.	Delaware
Xaloy Extrusion LLC dba Nordson Xaloy Incorporated	Delaware
Xaloy Holdings, Inc.	Delaware
Xaloy Superior Holdings, Inc.	Delaware
J and M Laboratories, Inc.	Georgia
Micromedics, Inc. dba Nordson MEDICAL	Minnesota
Nordson Medical (NH), Inc.	New Hampshire
Fluortek, LLC	New Jersey
Nordson Advanced Technology LLC	Ohio
Nordson Atlantic LLC	Ohio
Nordson England L.L.C.	Ohio
Nordson Medical Corporation	Ohio
Nordson Pacific, Inc.	Ohio
Nordson U.S. Trading Company	Ohio
Nordson Xaloy Incorporated	Ohio
Realty Land Conservancy III LLC	Ohio
Spirex Corporation dba Nordson Xaloy Incorporated	Ohio
New Castle Industries, Inc. dba Nordson Xaloy Incorporated	Pennsylvania
EFD International, Inc.	Rhode Island
Nordson EFD LLC	Rhode Island
INTERNATIONAL:	
Nordson Australia Pty. Limited	Australia
Nordson Pacific, Inc. Australian Representative Office	Australia
Nordson Osterreich GmbH	Austria
Nordson Benelux S.A./N.V.	Belgium

Name	Jurisdiction of Incorporation
INTERNATIONAL:	
Nordson do Brasil Industria e Comercio Ltda.	Brazil
Nordson Canada Limited	Canada
Dage Test Systems (Suzhou) Co. Ltd.	China
Hanshitong (Shanghai) Enterprise Management Consulting Co. Ltd.	China
Matrix (Suzhou) Trading Co. Ltd.	China
Nordson (China) Co., Ltd.	China
Nordson (Shanghai) Business Consulting Co., Ltd.	China
Nordson China Business Trust	China
Nordson PPS (Shanghai) Co. Ltd.	China
Nordson PPS (Shanghai) Representative Office	China
PDMC Branch Company of Nordson (China) Ltd.	China
Sonoscan Acoustic Imaging Instruments (Shanghai) Limited	China
Suzhou Nordson Electronics Equipment., Co., Ltd.	China
Nordson Andina Limitada	Colombia
Nordson CS, spol.s.r.o.	Czech Republic
Nordson Danmark A/S	Denmark
Nordson Finland Oy	Finland
Dosage 2000 S.A.R.L	France
Nordson France S.A.S.	France
Dage Deutschland GmbH	Germany
Matrix Technologies GmbH	Germany
Nordson BKG GmbH	Germany
Nordson Deutschland GmbH	Germany
Nordson Engineering GmbH	Germany
Nordson Germania Ltd. & Co. KG	Germany
Nordson Holdings S.à r.l. & Co. KG	Germany
Nordson SELECT GmbH	Germany
Nordson Xaloy Europe GmbH	Germany
Ligonia Limited	Hong Kong
Macaria Limited	Hong Kong
Nordson Advanced Technology (Hong Kong) Ltd.	Hong Kong
Nordson Asia Pacific, Limited	Hong Kong
Sonoscan Asia Pacific Limited	Hong Kong
Nordson Hungary Kft	Hungary
Nordson India Private Limited	India
Nordson S.E. Asia (Pte.) Limited, Indonesia Representative Office	Indonesia
Chartview Investments Limited	Ireland
Nordson MEDICAL Ireland Limited	Ireland
CardioNiti Ltd.	Israel
Great Aspirations Ltd.	Israel
MedKardia Ltd.	Israel
Nordson MEDICAL Israel AC Ltd.	Israel
Nordson MEDICAL Israel Ltd.	Israel
SafePass Vascular Ltd.	Israel
Score It Ltd.	Israel
Nordson Italia S.p.A.	Italy
Nordson Xaloy Italia S.r.l.	Italy

Name	Jurisdiction of Incorporation
INTERNATIONAL:	
Nordson Advanced Technology (Japan) K.K.	Japan
Nordson K.K.	Japan
Nordson Xaloy K.K.	Japan
Nordson European Holdings Luxembourg S.à r.l.	Luxembourg
Nordson Luxembourg S.à r.l.	Luxembourg
Nordson S.à r.l.	Luxembourg
Nordson (Malaysia) Sdn. Bhd.	Malaysia
Nordson MEDICAL S.A. de C.V. (Mexico)	Mexico
Nordson de Mexico, S.A. de C.V.	Mexico
Nordson de Mexico Trading, S.A. de C.V.	Mexico
Nordson Benelux B.V.	The Netherlands
Nordson B.V.	The Netherlands
Nordson Dima B.V.	The Netherlands
Nordson New Zealand	New Zealand
Nordson Norge A/S	Norway
Nordson Polska Sp.z.o.o.	Poland
Nordson Portugal Equipamento Industrial, Lda.	Portugal
Nordson Russia Limited Liability Company	Russia
Matrix Inspection Systems, Pte. Ltd.	Singapore
Nordson Advanced Technology (Singapore) Pte. Ltd.	Singapore
Nordson Advanced Technology International Pte. Ltd.	Singapore
Nordson S.E. Asia (Pte.) Ltd.	Singapore
Primount Singapore Pte. Ltd.	Singapore
Nordson SA (Pty) Limited	South Africa
Nordson Korea	South Korea
Nordson Iberica, S.A.	Spain
Nordson AB	Sweden
Nordson (Schweiz) A.G.	Switzerland
Nordson Advanced Technology LLC (Taiwan Branch)	Taiwan
Nordson (Thailand) Ltd.	Thailand
Nordson Xaloy Asia (Thailand) Ltd.	Thailand
Dage Holdings Limited	United Kingdom
Dage Pension Trustees Limited	United Kingdom
Dage Precision Industries Limited	United Kingdom
Majority Kingdom Investment Limited	United Kingdom
Minority Kingdom Investment Limited	United Kingdom
Nordson (U.K.) Limited	United Kingdom
Nordson London Limited	United Kingdom
Primount LLP	United Kingdom
vivaMOS Ltd.	United Kingdom
Nordson International de Venezuela, CA	Venezuela
Representative Office of Nordson S.E. Asia (Pte.) Limited in Hanoi City	Vietnam
Representative Office of Nordson S.E. Asia (Pte.) Limited in Ho Chi Minh City	Vietnam

Exhibit 23

NORDSON CORPORATION
Consent of Independent Registered Public Accounting Firm

We consent to the incorporation by reference in the following Registration Statements:

1. Registration Statement (Form S-8 No. 333-167406) pertaining to the Nordson Employees' Savings Trust Plan and Nordson Hourly-Rated Employees' Savings Trust Plan,
2. Registration Statement (Form S-8 No. 33-18309) pertaining to the Nordson Employees' Savings Trust Plan,
3. Registration Statement (Form S-8 No. 33-33481) pertaining to the Nordson Hourly-Rated Employees' Savings Trust Plan,
4. Registration Statement (Form S-8 No. 333-119399) pertaining to the Nordson Corporation 2004 Long-Term Performance Plan,
5. Registration Statement (Form S-8 No. 333-188980) pertaining to the Nordson Corporation 2012 Stock Incentive and Award Plan, and
6. Registration Statement (Form S-8 No. 333-225378) pertaining to the Amended and Restated Nordson Corporation 2012 Stock Incentive and Award Plan;

of our reports dated December 18, 2020, with respect to the consolidated financial statements and schedule of Nordson Corporation and the effectiveness of internal control over financial reporting of Nordson Corporation, included in this Annual Report (Form 10-K) of Nordson Corporation for the year ended October 31, 2020.

/s/ Ernst & Young LLP

Ernst & Young LLP

Cleveland, Ohio
December 18, 2020

Exhibit 31.1

CERTIFICATION PURSUANT TO RULE 13a-14(a)/15d-14(a) OF THE SECURITIES EXCHANGE ACT OF 1934, AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Sundaram Nagarajan, certify that:

1. I have reviewed this Annual Report on Form 10-K of Nordson Corporation;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
    a) designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
    b) designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
    c) evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
    d) disclosed in this report any change in the registrant’s internal control over financial reporting that occurred during the registrant’s most recent fiscal quarter (the registrant’s fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant’s internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
    a) all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
    b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: December 18, 2020

/s/ Sundaram Nagarajan

Sundaram Nagarajan

President and Chief Executive Officer

Exhibit 31.2

CERTIFICATION PURSUANT TO RULE 13a-14(a)/15d-14(a) OF THE SECURITIES EXCHANGE ACT OF 1934, AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Joseph P. Kelley, certify that:

1. I have reviewed this Annual Report on Form 10-K of Nordson Corporation;

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

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

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

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

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

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

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

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

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

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

Date: December 18, 2020

/s/ Joseph P. Kelley

Joseph P. Kelley
Executive Vice President, 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 of Nordson Corporation (the "Company") on Form 10-K for the year ended October 31, 2020, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Sundaram Nagarajan, president and chief executive 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: December 18, 2020

/s/ Sundaram Nagarajan

Sundaram Nagarajan

President and Chief Executive Officer

Exhibit 32.2

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

In connection with the Annual Report of Nordson Corporation (the "Company") on Form 10-K for the year ended October 31, 2020, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Joseph P. Kelley, executive vice president, 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: December 18, 2020

/s/ Joseph P. Kelley

Joseph P. Kelley
Executive Vice President, Chief Financial Officer

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Nordson Corporation

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