



2021

NORDSON CORPORATION / ANNUAL REPORT

Dear Nordson shareholders,

The accelerated economic recovery that the world experienced in fiscal 2021 was beyond our expectations. We were well positioned coming into the year having remained invested in our customer-centric business model and precision technologies during the COVID-19 pandemic to make a strong Nordson even stronger. Throughout fiscal 2021, we continued to stay sharply focused on protecting the health and safety of our employees, while also meeting the needs of our customers. I am proud to share that the dedication, passion and focus of our employees led us to deliver a record year surpassing our prior record annual sales by \$108 million and operating profit by \$111 million.

Positioning Nordson for top tier growth

At our Investor Day in March 2021, we introduced the Ascend Strategy – Nordson’s roadmap for delivering top tier revenue growth with leading margins and returns. The successful execution of the Ascend Strategy is targeted to deliver \$3 billion in sales and 30% EBITDA by 2025. It encompasses three interconnected pillars: NBS Next, Owner Mindset and Winning Teams. All three pillars are built on the foundation of what makes Nordson special, our cultures and values.

At the heart of the Ascend Strategy is the NBS Next growth framework. The essence of this growth framework is a data-driven segmentation approach to identify the best growth opportunities in each of our divisions. The execution of this strategy across the company is focused only on these opportunities. For example, NBS Next drove our focus:

- *At the company level, to complete the screws and barrels product line divestiture at the beginning of February 2021. This allowed us to dedicate our resources to more differentiated areas of the polymer processing product portfolio.*
- *In our medical divisions, to invest in manufacturing capacity for our Loveland, Colorado facility to grow our biopharmaceutical components and to build a new facility in Mexico to support the needs of our customers for interventional solutions.*
- *In all the divisions, to prioritize our supply chain strategy for the needs of our best customers and products, resulting in superior customer support in a challenging macro-environment.*

The list goes on. Simply, the NBS Next growth framework was an important factor in delivering fiscal 2021’s record growth across a wide array of end markets and geographies. The coming year will be critical as we advance the quality and rigor of the NBS Next practice more broadly in the company.

Adding this growth framework to Nordson’s already strong core capabilities results in a powerful combination. Our customer-intimate model gives us insight to the needs of our customers, and we develop precision technologies as an enabler of their new product roadmaps.

In fiscal 2021, we celebrated the success of two of our newest products: the ProBlue Flex Melter for packaging customers, and the new Vantage integrated dispense and automation system, which is the first fully integrated wafer handling system designed for the semiconductor industry. In both cases, these new products are advancing automation, reducing costs, and accelerating productivity for our customers.

Acquisition also is a key lever in our growth strategy. On November 1, 2021, we completed the acquisition of NDC Technologies, a leading global provider of precision measurement solutions for in-line process control. This acquisition expands our test and inspection platform into new end markets and adjacent technologies. With Nordson-like gross margins, NDC has a differentiated product portfolio that is leveraged through a customer-centric business model.

Furthering our commitment to being a good corporate citizen

In November, we published our Environmental, Social and Governance (ESG) report. This highlights how the Ascend Strategy and ESG priorities are closely integrated and depend on each other to enhance our overall performance.

The underlying elements of ESG have always been central to who Nordson is and how we succeed. Nordson is a light-assembly manufacturer, and we are committed to identifying ways to minimize our own environmental footprint while helping our customers do the same. The report also highlights our efforts to foster an inclusive and diverse workplace. Our board of directors has already made strides in this area with 56% overall board diversity. Building Winning Teams by developing a deep and diverse bench of talent is critical to our success as an organization.

Our report is the new foundation for our ESG strategy, influenced by leading ESG frameworks. We look forward to building upon this foundation in future reporting.

Thank you for your support

The Ascend Strategy is about building a stronger Nordson. We have made solid progress deploying the NBS Next growth framework, empowering an Owner Mindset and building Winning Teams. We look forward to continuing to build upon our momentum in fiscal 2022. Thank you to our shareholders, customers and employees for your continued support.



Sincerely,

A handwritten signature in black ink that reads "S. Nagarajan". The signature is written in a cursive, flowing style.

*Sundaram Nagarajan
President and Chief Executive Officer*

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, 2021

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

(State of incorporation)

28601 Clemens Road Westlake, Ohio

(Address of principal executive offices)

34-0590250

(I.R.S. Employer Identification No.)

44145

(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, 2021 was approximately \$12,262,663,905.

There were 58,176,606 Common Shares outstanding as of November 30, 2021.

Documents incorporated by reference:

Portions of the Proxy Statement for the 2022 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 otherwise indicated. 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 is an innovative precision technology company that leverages a scalable growth framework to deliver top tier growth with leading margins and returns. We engineer, manufacture and market 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 and various medical products such as: catheters, cannulae, medical balloons and medical tubing.. 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, 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 67 percent of our revenues were generated outside the United States in 2021.

We have 6,813 employees worldwide. Principal manufacturing facilities are located in the United States, the People's Republic of China, Germany, Ireland, Israel, Mexico, the Netherlands, 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, including multiple variants, 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, variations of COVID-19, 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.

New Secretary and General Counsel

On October 12, 2021, we announced that Jennifer McDonough had been named Executive Vice President, General Counsel and Secretary, effective November 1, 2021. Ms. McDonough succeeded Gina Beredo, who left the Company to pursue a new opportunity.

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 2021, we launched the Ascend strategy, which is designed to deliver top tier revenue growth with attractive margins and returns. Ascend is driven by three interconnected pillars: the NBS (Nordson Business System) Next growth framework; Owner Mindset, our division-led organizational structure; and Winning Teams, our talent strategy. These three pillars are built upon the foundation of what makes Nordson special: our culture and our values.

The NBS Next growth framework, the heart of the Ascend strategy, uses data-based segmentation to identify our greatest opportunities for profitable growth and ensure we are investing our resources disproportionately in those areas. Using data in a consistent and disciplined way, leaders across the Company are defining 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 have differentiated precision technology based product portfolio, serve attractive high-growth end-markets applications and have a customer-centric business model. The primary goals of our acquisition strategy are to complement our current capabilities, diversify our business into new industry sectors 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 divisions, resulting in a sense of ownership and commitment on the part of employees in accomplishing our objectives.

We are an equal opportunity employer.

At Nordson, we have a long and proud history of investing in the communities where we live and work. 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. 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 11 international locations. Since 1989, we have donated more than \$135 million to communities where we live and work. In addition, our employees volunteered more than 106,000 hours through our Time 'N Talent program.

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 precision technology 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 2021, 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 delivers proprietary dispensing and processing technology to diverse end markets. Product line specific solutions reduce material consumption, increase line efficiency and enhance product brand and appearance. Technologies are used for dispensing adhesives, coatings, paint, finishes, sealants and other materials. This segment primarily serves the industrial, consumer durables and non-durables markets.

- **Industrial Coatings** – Automated and manual dispensing products and systems for cold materials, container coating, liquid finishing and powder coating, as well as ultraviolet equipment used primarily in curing and drying operations. Key strategic markets include beverage containers and food cans, electric battery, appliances, automotive, building and construction, composites, electronics and medical.
- **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 and biopolymer melt stream in 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.

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 within medical equipment and related surgical procedures, in critical industrial production processes and for applying and controlling the flow of adhesives, sealants, lubricants, and biomaterials. Key strategic markets include medical, consumer goods, electronics, and industrial assembly.
- **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, micro mechanical systems 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 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.

Though the COVID-19 pandemic has disrupted the global supply chain, we have not experienced significant supply disruption from third-party component suppliers. However, we have faced and continue to face some supply chain constraints primarily related to logistics, including higher freight rates, and obtaining select manufacturing components. In addition, shipments between countries have been impacted and we have experienced delays due to a variety of factors related to supply chain disruption.

Intellectual Property

We rely on a combination of intellectual property rights, including patents, trademarks, copyrights, trade secrets, and contractual provisions to protect our intellectual property. Our worldwide intellectual property portfolio is strengthened through innovation and brand recognition, and a comprehensive approach for protection and enforcement. We enter into confidentiality and intellectual property agreements with our employees that require them to disclose any inventions created in the scope of employment, convey all rights to those inventions to us, and restrict the distribution of proprietary information. Risk factors associated with our intellectual property are discussed in Item 1A, "Risk Factors".

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 rights to sell our products both domestically and internationally. Although in the aggregate, our global portfolio of more than 2,100 granted and pending patents and more than 1,000 trademarks are valuable assets that are important to our operations, we believe that our competitive advantage is also largely attributable to the technical, marketing, and sales competence and capabilities of our employees, rather than on any individual patent or trademark. Therefore, we do not consider the expiration or loss of any single patent, trademark, or intellectual property right, to be material to our business as a whole.

Seasonal Variation in Business

Historically, 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. However, COVID-19, supply chain disruptions related to COVID-19 and other unusual events have impacted this historical trend to a degree.

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.

Compliance with Governmental Regulations

As a U.S. public company that supports manufacturing, designing and servicing highly complex products in regulated 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 2021 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 ensure 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, 2021, we had 6,813 full-time and part-time employees, including 141 at our Amherst, Ohio, facility who are represented by a collective bargaining agreement that expires on November 12, 2022.

Health and Safety

In 2021, our employees' health and safety remained our highest priority, especially as we continued to operate through the ever-present COVID-19 pandemic. 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 pandemic. Continuing the best practices that we adopted in 2020, we maintained a safe work environment for our employees by staying true to the recommendations of the World Health Organization, the U.S. Centers for Disease Control and Prevention, and local governments, including taking actions such as:

- Increasing hygiene, cleaning and sanitizing procedures at all locations;
- Providing personal protective equipment, such as masks, available to employees;
- Limiting travel and encouraged quarantine upon return;
- Maintaining our COVID-leave policy encouraging employees to take time off for illness or caretaking while maintaining steady wages;
- Enforcing strict protocols and screening for outside guests; and
- Updating our coronavirus intranet site as a central resource for up-to-date and accurate information.

As the year progressed, different regions of the world experienced lower level of community spread. We began slowly reintegrating our employees, who had been working from home, into the office. As vaccines have become more available, we continue to actively encourage our global employees to be vaccinated as the best defense against the COVID-19 virus. We continue to be vigilant and adjust our guidelines based upon local data. Our focus on employee health and safety has allowed us to successfully meet the evolving needs of our customers during this unique and dynamic period.

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 6% of her or his base compensation. In addition, non-union new hires and re-hires as of July 1, 2021 are eligible for an additional enhanced 401(k) contribution of 3% eligible earnings. All contributions by employees into the Savings Plan are fully vested immediately. Company contributions, both the match and enhanced contribution, have a three-year graded vesting schedule and vest at 33 1/3% each year until fully vested after three 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, non-union employees hired prior to July 1, 2021 are eligible to participate in a Company-sponsored tax-qualified pension plan for U.S.-based employees (the "Salaried Pension Plan"). The Salaried Pension Plan is designed to work together with social security benefits to provide employees with up to 30 years of service retirement income replacement 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 five years of service. All eligible union employees hired prior to November 1, 2004 participate in a Company-sponsored tax-qualified pension plan for U.S.-based 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 hired prior to July 1, 2021, as a replacement for retirement benefits limited by regulations under the Internal Revenue Code.

Together, the Salaried Pension Plan and Excess Defined Benefit Pension Plan are intended to provide executive officers, hired prior to July 1, 2021, with retirement income at a level equivalent to that provided to other employees under the Salaried Pension Plan.

We also provide service awards which show appreciation and thanks to longstanding employees with five 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 years as of the end of 2021 – 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 inclusion and diversity initiatives support our goal that everyone throughout the Company is engaged in creating an inclusive workplace, and we work to build diverse talent pools as part of our recruitment efforts. We strive to promote inclusion through “Inclusive Leadership” and unconscious bias training across the Company. With the support of our board of directors, we continue to drive our diversity and inclusion initiatives.

Available Information

Our annual report (Form 10-K), quarterly reports (Form 10-Q) and current reports (Form 8-K) and amendments to those reports filed or furnished with the Securities and Exchange Commission ("SEC") 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. Additional risks factors may exist that are not presently known by the Company or that are currently deemed immaterial may also be present.

Risks Related to the COVID-19 pandemic

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

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 in the United States and other countries across the world, and the ultimate duration and severity of its effects are currently unknown. Governments around the world have implemented various measures during this pandemic 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 utilized fiscal and monetary stimulus measures to attempt 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, variations of COVID-19, 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 2021, approximately 33 percent of our revenue was generated in the United States, while approximately 67 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.

Any 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 any 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 2021 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 the departure of the United Kingdom from the European Union ("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

A disruption in, shortage of, or price increases for, supply of our components and raw materials may adversely impact our operations.

While we manufacture certain parts and components used in our products, we require substantial amounts of raw materials and purchase some parts and components from suppliers. The availability and prices for raw materials, parts and components may be subject to curtailment or change due to, among other things, suppliers' allocation to other purchasers, interruptions in production by suppliers, changes in exchange rates and prevailing price levels, including as a result of inflation. While we generally attempt to pass along higher raw material, part and component costs to our customers in the form of price increases, there historically has been a delay between an increase in our raw material costs and our ability to increase the prices of our products. Additionally, we may not be able to increase the prices of our products due to competitive pricing pressure and other factors. Shortages in raw materials or our inability to pass along price increases could affect the prices we charge, our operating costs and our competitive position, which could adversely affect our business, financial condition, results of operations and cash flows.

In addition, our facilities, supply chains, distribution systems, and products may be impacted by natural or man-made disruptions, including armed conflict, demand surges, damaging weather or other acts of nature, pandemics or other public health crises. A shutdown of, or inability to utilize, one or more of our facilities, our supply chain, or our distribution system could significantly disrupt our operations, delay production and shipments, impact our relationships and reputation with customers, suppliers, employees and others, result in lost sales, or result in legal exposure and large remediation or other expenses, which could adversely affect our business, financial condition, results of operations and cash flows.

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.

The COVID-19 pandemic has created labor force disruptions impacting factory production and other operations. 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, including factory production workers and other staff, to support our growth and operational initiatives and replace those who retire or resign. Failure to retain our leadership team and workforce and to 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.

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. 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;
- 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 cyber 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 GDPR, the Brazilian General Data Protection Law and the CCPA, 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.

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.

Risks Related to Legal, Compliance and Regulatory Matters

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, changes in the actuarial assumptions used, and management of pension liabilities 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, and how the Company manages pension liabilities could lead to variability in financial results and could have a material adverse impact on liquidity.

Our global operations are subject to increasingly complex environmental regulatory requirements.

We are subject to increasingly complex environmental regulations affecting international manufacturers, including those related to air and water emissions, waste management and climate change. Some environmental laws impose strict, retroactive and joint and several liability for the remediation of the release of hazardous substances, even for conduct that was lawful at the time it occurred, or for the conduct of or conditions caused by prior operators, predecessors or third parties. Failure to comply with environmental laws could expose us to penalties or clean-up costs, civil or criminal liability and sanctions on certain of our activities, as well as damage to property or natural resources. These liabilities, sanctions, damages and remediation efforts related to any non-compliance with such laws and regulations could negatively impact our ability to conduct our operations and our financial condition and results of operations. In addition, there can be no assurances that we will not be adversely affected by costs, liabilities or claims with respect to existing or subsequently acquired operations or under present laws and regulations or those that may be adopted or imposed in the future.

Changes in environmental laws or regulations could result in higher expenses and payments, and uncertainty relating to environmental laws or regulations may also affect how we conduct our operations and structure our investments and could limit our ability to enforce our rights. Changes in environmental and climate change laws or regulations, including laws relating to greenhouse gas emissions, could subject us to additional costs and restrictions, including increased energy and raw material costs. If environmental laws or regulations are either changed or adopted and impose significant operational restrictions and compliance requirements upon us or our products, they could negatively impact our business, capital expenditures, results of operations, financial condition and competitive position.

It is our policy to apply strict standards for environmental protection to all of our operations inside and outside of the United States, even when we are not subject to local government regulations. We may incur substantial costs, including cleanup costs, fines and civil or criminal sanctions, liabilities resulting from third-party property damage or personal injury claims, or our products could be prohibited from entering certain jurisdictions, if we were to violate or become liable under environmental laws, if our products become non-compliant with environmental laws or if we were to undertake environmental protection actions voluntarily.

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, 2021, we had \$815,897 of total debt and notes payable outstanding, of which 38 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 \$3,982 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 June 2023. The uncertainty regarding the transition from LIBOR to another benchmark rate or rates could have adverse impacts on our available debt that currently uses 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, including any that may be caused by global climate change, 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, 2021 were as follows:

Location	Description of Property	Approximate Square Feet
United States		
Amherst, Ohio ^{1,2}	A manufacturing, laboratory and office complex	521,000
Norwich, Connecticut ²	A manufacturing, laboratory and office building	212,000
Carlsbad, California ²	Three manufacturing and office buildings (leased)	181,000
Duluth, Georgia ¹	A manufacturing, laboratory and office building	176,000
Chippewa Falls, Wisconsin ¹	A manufacturing, warehouse and office building (leased)	145,000
Swainsboro, Georgia ¹	A manufacturing building	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
Elk Grove, Illinois ²	A manufacturing, warehouse and office building (leased)	40,000
San Jose, CA ²	A manufacturing, warehouse and office building (leased)	37,000
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
Huntington Beach, California ²	An office, laboratory and warehouse building (leased)	21,000

Business Segment - Property Identification Legend

¹ - Industrial Precision Solutions

² - Advanced Technology Solutions

Location	Description of Property	Approximate Square Feet
International		
Münster, Germany ¹	One manufacturing, warehouse and office building (leased)	260,000
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	Two manufacturing, warehouse and office buildings (leased)	89,000
Tokyo, Japan ^{1,2}	Four office, laboratory and warehouse buildings (leased)	76,000
Suzhou, China ^{1,2}	Two manufacturing, warehouse and office buildings (leased)	75,000
Tecate, Mexico ²	A manufacturing, warehouse and office building (leased)	59,000
Bangalore, India ^{1,2}	An assembly, 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 (leased)	52,000
Erkrath, Germany ^{1,2}	An office, laboratory and warehouse building (leased)	50,000
Boyle, Ireland ²	A manufacturing, warehouse and office building	47,000
Deurne, Netherlands ²	A manufacturing, warehouse and office building (leased)	46,000
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
Sao Paulo, Brazil ^{1,2}	An office, laboratory and warehouse building (leased)	23,000
El Marques, Mexico ^{1,2}	A warehouse and office building	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 18, “Contingencies - Class Action Litigation” in the accompanying Notes to Consolidated Financial Statements included in Part II, Item 8 of this Annual Report, which is incorporated by reference.

Item 4. Mine Safety Disclosures

None.

Information About Our Executive Officers

Our executive officers as of October 31, 2021, 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	59	2019	President and Chief Executive Officer, 2019
Joseph P. Kelley	49	2020	Executive Vice President, Chief Financial Officer, 2020
James E. DeVries	62	2012	Executive Vice President, 2012
Stephen P. Lovass	52	2017	Executive Vice President, 2017
Gregory P. Merk	50	2006	Executive Vice President, 2013
Shelly M. Peet	56	2007	Executive Vice President, 2009
Jeffrey A. Pembroke	54	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 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.

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.

Effective November 1, 2021, Jennifer L. McDonough (50), was named Executive Vice President, General Counsel and Secretary and leads the Company's global legal function in ethics and compliance, intellectual property and other general corporate legal matters. Ms. McDonough brings over 20 years of experience advising companies on wide-ranging, critical corporate initiatives and most recently served as vice president, deputy general counsel and assistant secretary at PPL Corporation (NYSE: PPL), a Fortune 500 utility, where she was responsible for the delivery of extensive legal counsel and services, including in the areas of general corporate law, mergers and acquisitions, corporate venture capital and investment transactions, securities and finance. Prior to joining PPL in 2017, Ms. McDonough served as senior vice president, general counsel and secretary at REX Energy Corporation, an independent condensate, NGL and natural gas company, having joined REX Energy in April 2011, and before that as assistant general counsel and assistant secretary at Kennametal Inc., a global manufacturer and provider of engineered products and solutions (NYSE: KMT), which she joined in May 2005. She began her career as a business and finance attorney with the international law firm Morgan, Lewis and Bockius LLP.

PART II

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

Market Information and Dividends

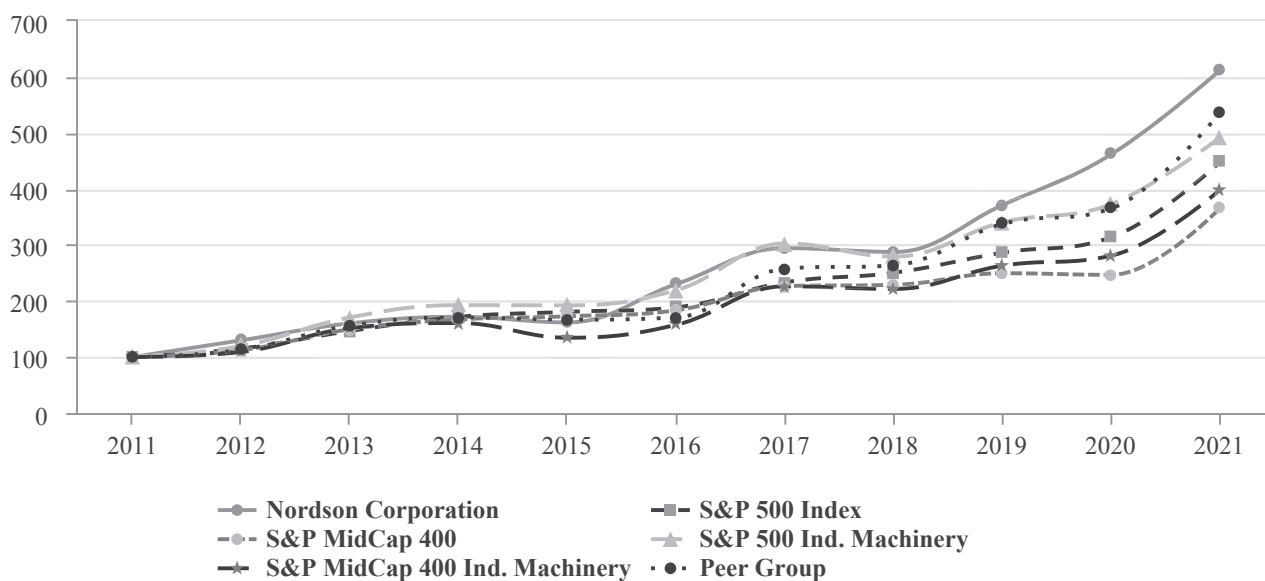
Our common shares are listed on the Nasdaq Global Select Market under the symbol NDSN. As of November 30, 2021, there were 1,243 record shareholders.

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, 2011 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.

Comparison of 10 Year Cumulative Total Return
Assumes Initial Investment of \$100 on November 1, 2011
Fiscal Year Ending October 31, 2021



Company/Market/Peer Group	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Nordson Corporation	\$100.00	\$129.96	\$160.22	\$171.87	\$161.91	\$230.59	\$294.50	\$287.79	\$372.02	\$462.99	\$613.50
S&P 500 Index	\$100.00	\$115.21	\$146.52	\$171.82	\$180.75	\$188.90	\$233.54	\$250.70	\$286.61	\$314.45	\$449.39
S&P MidCap 400	\$100.00	\$112.11	\$149.64	\$167.08	\$172.80	\$183.61	\$226.72	\$229.04	\$249.69	\$246.81	\$367.51
S&P 500 Ind. Machinery	\$100.00	\$119.68	\$170.88	\$192.70	\$192.41	\$219.70	\$302.89	\$279.47	\$340.83	\$373.84	\$493.45
S&P MidCap 400 Ind. Machinery	\$100.00	\$109.21	\$151.63	\$160.68	\$134.50	\$157.85	\$226.40	\$221.63	\$263.37	\$281.42	\$399.77
Peer Group	\$100.00	\$113.18	\$156.53	\$170.69	\$166.65	\$170.89	\$257.95	\$263.99	\$338.06	\$365.85	\$538.56

Source: Zack’s Investment Research

Common Share Repurchases

<i>(in whole shares)</i>	Total Number of Shares Repurchased ⁽¹⁾	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, 2021 to August 31, 2021	24,136	\$ 227.87	24,126	\$ 400,566
September 1, 2021 to September 30, 2021	21,738	\$ 242.04	21,680	\$ 395,319
October 1, 2021 to October 31, 2021	13,513	\$ 240.41	13,513	\$ 392,070
Total	<u>59,387</u>		<u>59,319</u>	

⁽¹⁾ Includes shares tendered for taxes related to stock option exercises and 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. Approximately \$392,070 of the total \$1,000,000 authorized remained available for share repurchases at October 31, 2021. 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 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. We did not record any goodwill impairment charges in 2021. We use an independent valuation specialist to assist with refining our assumptions and methods used to determine fair values. 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 2021, the WACC rates used ranged from 7.5 percent to 10.0 percent depending upon the reporting unit's size, end market volatility, and projection risk. See Note 6 - Goodwill and intangible assets for further details regarding the valuation methodologies used.

In 2021, 2020, and 2019, the results of our annual impairment tests indicated no impairment.

The fair value ("FV") was compared to the carrying value ("CV") for each reporting unit. Based on the results shown in the table below and based on our measurement date of August 1, 2021, our conclusion is that no goodwill was impaired in 2021. 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	7.5%	865%	\$ 393,900
Industrial Precision Solutions Segment - Industrial Coating Systems	10.0%	982%	\$ 24,058
Advanced Technology Solutions Segment - Electronics Systems	8.0%	404%	\$ 28,014
Advanced Technology Solutions Segment - Fluid Management	8.0%	215%	\$ 1,177,303
Advanced Technology Solutions Segment - Test & Inspection	10.0%	287%	\$ 95,290

Pension plan in the United States - The measurement of the liabilities related to our domestic pension plan 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 liabilities associated with the Company's international pension plans and OPEB are not as materially sensitive to changes in assumptions as the pension plan in the United States.

The weighted-average discount rate used to determine the present value of our domestic pension plan obligations was 3.02 percent at October 31, 2021 and 2.85 percent at October 31, 2020. The discount rate used was 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 both 2021 and 2020.

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, 2021 and October 31, 2020.

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	
	1% Point Increase	1% Point Decrease
Discount rate:		
Effect on total net periodic pension cost in 2021	\$ (7,223)	\$ 9,334
Effect on pension obligation as of October 31, 2021	\$ (80,729)	\$ 100,948
Expected return on assets:		
Effect on total net periodic pension cost in 2021	\$ (4,468)	\$ 4,467
Compensation increase:		
Effect on total net periodic pension cost in 2021	\$ 6,663	\$ (5,794)
Effect on pension obligation as of October 31, 2021	\$ 32,240	\$ (28,702)

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.

2021 compared to 2020

Below is a detailed discussion comparison of our results of operations for the fiscal years ended October 31, 2021 and October 31, 2020. For a discussion of changes from the fiscal year ended October 31, 2020 to the fiscal year ended October 31, 2019, refer to Part II, Item 7, Management’s Discussion and Analysis of Financial Condition and Results of Operations, of our Annual Report on Form 10-K for the fiscal year ended October 31, 2020.

As used throughout this annual report, 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 2021 were \$2,362,209, an increase of 11.4 percent from 2020 sales of \$2,121,100. The increase consisted of a 11.3 percent improvement in sales volume and favorable currency translation effects, which increased sales by 2.7 percent partially offset by a net 2.6 percent decrease from acquisitions and divestitures.

Sales outside the United States accounted for 66.6 percent of total sales in 2021, as compared to 64.4 percent in 2020. On a geographic basis, sales in the United States were \$789,303, an increase of 4.5 percent from 2020. The increase in sales consisted of a 8.3 percent increase in sales volume partially offset by a 3.8 percent decrease from acquisitions and divestitures. Sales in the Asia Pacific region were \$668,035, an increase of 19.1 percent from 2020, with volume increasing 16.7 percent and favorable currency effects of 4.2 percent. partially offset by a 1.8 percent decrease from acquisitions and divestitures. Sales in Europe were \$617,492, an increase of 15.1 percent from 2020. The increase in sales consisted of a 11.4 percent volume increase and favorable currency effects of 5.7 percent partially offset by a 2.0 percent decrease from acquisitions and divestitures. In the Americas region, sales were \$179,807, an increase of 27.1 percent from 2020, with volume increasing 24.4 percent, favorable currency effects of 1.8 percent and a 0.9 percent increase from acquisitions and divestitures. Sales in Japan were \$107,572, a decrease of 15.0 percent from 2020, with volume decreasing 11.0 percent, unfavorable currency effects of 0.5 percent and a 3.5 percent decrease from acquisitions and divestitures.

Cost of sales were \$1,038,129 in 2021, up 4.8 percent from \$990,632 in 2020. Gross profit, expressed as a percentage of sales, increased to 56.1 percent in 2021 from 53.3 percent in 2020. The 2.8 percentage point increase in gross margin was driven by a favorable product mix impact, principally driven by a divestiture, of 1.9 percentage points and favorable sales volume leverage.

Selling and administrative expenses were \$708,953 in 2021, up from \$693,552 in 2020. The 2.2 percent increase was driven by base business growth of 2.6 percentage points due primarily to increased variable incentive compensation, partially offset by reductions resulting from structural cost reduction actions taken in 2020. In addition, unfavorable currency translation effects increased costs by 2.1 percentage points. These increases were offset by a divestiture impact of 2.5 percentage points. Selling and administrative expenses as a percentage of sales decreased to 30.0 percent in 2021 from 32.7 percent in 2020. Of the 2.7 percentage point decrease, a divestiture decreased expenses by 1.2 percentage points, while sales growth leverage contributed to the remaining percentage point improvement.

Operating profit as a percentage of sales increased to 26.0 percent in 2021 compared to 16.5 percent in 2020. The 9.5 percent increase in operating margin was the result of improved operating results, specifically favorable absorption from higher sales volume and favorable product mix driven by a divestiture, and 2020 operating profit was negatively impacted by an assets held for sale impairment charge related to the 2021 product line divestiture.

Operating capacity for each of our segments can support fluctuations in order activity without significant changes in operating costs. Operating margins for each segment were favorably impacted by a weaker dollar primarily against the Euro, Chinese Yuan, and Mexican Peso during 2021 as compared to 2020.

Interest expense in 2021 was \$25,491, a decrease of \$6,669, or 20.7 percent, from 2020. The decrease was due to lower average debt levels compared to the prior year. Other expense in 2021 was \$17,610 compared to other expense of \$17,577 in 2020. Included in 2021's other expense were pension costs of \$9,484 and \$5,926 in foreign currency losses. Included in the prior year's other expense were pension costs of \$13,683 and \$1,532 in foreign currency losses. The decrease in pension cost was principally attributable to decreased amortization of net actuarial losses.

Income tax expense in 2021 was \$119,808, or 20.9 percent of pre-tax income, as compared to \$51,950, or 17.2 percent of pre-tax income in 2020. The income tax provision for 2021 included a tax benefit of \$5,982 due to our share-based payment transactions. Our income tax provision for 2020 included a tax benefit of \$15,661 due to our share-based payment transactions. 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.

Net income was \$454,368, or \$7.74 per diluted share, in 2021, compared to net income of \$249,539, or \$4.27 per diluted share, in 2020. This represented a 82.1 percent increase in net income and a 81.3 percent increase in diluted earnings per share. Net income in 2020 included a non-cash, assets held for sale impairment charge net of tax \$72,117 related to the sale of the screws and barrels product line within the Adhesives reporting unit under our Industrial Precision Solutions segment. The remaining increase of \$2.24 per diluted share was primarily driven by sales growth and mix improvement.

Industrial Precision Solutions

Sales of the Industrial Precision Solutions segment were \$1,246,947 in 2021, an increase of 9.1 percent, from 2020 sales of \$1,143,423. The increase was the result of an organic sales volume increase of 11.7 percent and favorable currency effects that increased sales by 3.4 percent, partially offset by a divestiture impact of 6.0 percent. Growth occurred in all product lines, except nonwovens, and in all regions except for Japan.

Operating profit as a percentage of sales increased to 33.2 percent in 2021 compared to 18.2 percent in 2020. The 15.0 percentage point improvement in operating margin was the result of improved operating results, specifically favorable absorption from higher sales volume and favorable product mix driven by a divestiture, and 2020 operating profit negatively impacted by an assets held for sale impairment charge related to a divestiture.

Advanced Technology Solutions

Sales of the Advanced Technology Solutions segment were \$1,115,262 in 2021, an increase of 14.1 percent from 2020 sales of \$977,677. The increase was the result of an organic sales volume increase of 10.9 percent, favorable currency effects that increased sales by 1.9 percent and a 1.3 percent increase from acquisitions. Sales growth was strong across all product lines and in all regions.

Operating profit as a percentage of sales increased to 24.4 percent in 2021 compared to 19.6 percent in 2020. The 4.8 percentage point improvement in operating margin was principally driven by greater selling and administrative expense leverage which contributed 3.1 percentage points and was associated with the sales volume growth and cost structure simplification actions taken in 2020.

Liquidity and Capital Resources

Cash and cash equivalents increased \$91,679 in 2021 to \$299,972 as of October 31, 2021 compared to \$208,293 as of October 31, 2020. Approximately 55 percent of our consolidated cash and cash equivalents were held at various foreign subsidiaries as of October 31, 2021. On November 1, 2021, cash of \$180,000 was used to fund the acquisition of NDC Technologies ("NDC") as disclosed in Note 19 to these Consolidated Financial Statements.

Cash provided by operating activities was \$545,927 in 2021, compared to \$502,421 in 2020. 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 \$590,607 in 2021, compared to \$455,490 in 2020. Changes in working capital items provided cash of \$29,011 compared to \$45,113 provided in 2020 as increases in receivables and inventory were partially offset by increases in other liabilities. In addition, pension cash contributions increased by \$53,975 in 2021 compared to 2020 which are included in "Other - principally pension plan" in the Consolidated Statements of Cash Flows.

Cash used in investing activities was \$33,169 in 2021, compared to \$194,109 in 2020. In the current year, no cash was used for acquisitions compared to \$142,414 used in the prior year. Capital expenditures were \$38,303 in 2021 compared to \$50,535 in 2020.

Cash used in financing activities was \$422,913 in 2021, compared to \$251,529 cash used in 2020. Net repayment of long-term debt and long-term borrowings used \$289,416 of cash in 2021, compared to \$153,816 used in 2020. In 2021, cash of \$60,970 was used for the purchase of treasury shares, up from \$52,614 used in 2020. Dividend payments were \$97,683 in 2021, up from \$88,347 in 2020 due to an increase in the annual dividend to \$1.69 per share from \$1.53 per share. Issuance of common shares related to employee benefit plans generated \$31,780 of cash in 2021, down from \$50,853 in 2020.

The following is a summary of significant changes by balance sheet caption from October 31, 2020 to October 31, 2021. Inventories-net increased \$50,162 due to increased business activity during the year. Intangible assets-net decreased \$50,219 due to amortization expense and the divestiture of our screws and barrels product line. Pension obligations decreased \$84,945 primarily due to pension contributions during the second and third quarters of 2021.

Our operating performance, balance sheet position, and financial ratios for 2021 remained strong. Long-term debt decreased \$286,243 during 2021 primarily due to the full repayment of our term loan due 2024. The Company is 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, 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.

Contractual Obligations

The following table summarizes contractual obligations as of October 31, 2021:

	Payments Due by Period				
	Total	Less than 1 Year	1-3 Years	4-5 Years	After 5 Years
Debt ⁽¹⁾	\$ 813,930	30,643	547,644	135,643	100,000
Interest payments on long-term debt ⁽¹⁾	69,161	18,479	27,762	13,292	9,628
Finance lease obligations ⁽²⁾	23,153	6,162	6,952	2,512	7,527
Operating leases ⁽²⁾	126,190	18,942	29,896	22,790	54,562
Contributions related to pension and postretirement benefits ⁽³⁾	7,175	7,175	—	—	—
Purchase obligations ⁽⁴⁾	213,972	212,543	1,349	40	40
Total obligations	<u>\$ 1,253,581</u>	<u>\$ 293,944</u>	<u>\$ 613,603</u>	<u>\$ 174,277</u>	<u>\$ 171,757</u>

- (1) 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 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 such as our credit facilities are more than adequate to meet cash requirements for 2021 and beyond. There are no significant restrictions limiting the transfer of funds from international subsidiaries to the parent company.

Outlook

We are optimistic about our long-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 Ascend Strategy, should deliver sustainable profitable growth. We expect to deliver increased sales and earnings in 2022 compared to 2021.

New Accounting Standards

Refer to Note 2 to the Consolidated Financial Statements 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 2021, as compared with 2020, the United States dollar was generally weaker against foreign currencies. If 2020 exchange rates had been in effect during 2021, sales would have been approximately \$55,200 lower and third-party costs would have been approximately \$24,600 lower. 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. These effects on reported sales do not include the impact of local price adjustments made in response to changes in currency exchange rates.

Trends

Our solid historical performance is attributed to our diverse geographic and end market participation 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 annual report, 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 annual report 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. These statements reflect management's current expectations and involve a number of risks and uncertainties. These risks and uncertainties include, but are not limited to, U.S. and international economic conditions; financial and market conditions; currency exchange rates and devaluations; possible acquisitions including the Company's ability to complete and successfully integrate acquisitions, including integrating the acquisition of NDC; the Company's ability to successfully divest or dispose of businesses that are deemed not to fit with its strategic plan; the effects of changes in U.S. trade policy and trade agreements; the effects of changes in tax law; and the possible effects of events beyond our control, such as political unrest, acts of terror, natural disasters and pandemics, including the current COVID-19 pandemic.

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 annual 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, 2021	2022	2023	2024	2025	2026	Thereafter	Total Value	Fair Value
Annual repayments of long-term debt	\$30,643	\$130,643	\$110,643	\$85,643	\$50,000	\$100,000	\$507,572	\$549,895
Average interest rate on total borrowings outstanding during the year	3.7%	3.7%	3.8%	3.9%	4.0%	4.0%	3.7%	
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%	

We also have variable-rate notes payable and long-term debt. The weighted average interest rate of this variable-rate debt was 0.71 percent at October 31, 2021 and 0.76 percent at October 31, 2020. A one percent increase in interest rates would have resulted in additional interest expense of approximately \$3,982 on the variable rate notes payable and long-term debt in 2021.

Item 8. Financial Statements and Supplementary Data

Consolidated Statements of Income

Years ended October 31, 2021, 2020 and 2019

(In thousands except for per-share amounts)

	2021	2020	2019
Sales	\$ 2,362,209	\$ 2,121,100	\$ 2,194,226
Operating costs and expenses:			
Cost of sales	1,038,129	990,632	1,002,123
Selling and administrative expenses	708,953	693,552	708,990
Assets held for sale impairment charge	—	87,371	—
	1,747,082	1,771,555	1,711,113
Operating profit	615,127	349,545	483,113
Other income (expense):			
Interest expense	(25,491)	(32,160)	(47,145)
Interest and investment income	2,150	1,681	1,844
Other - net	(17,610)	(17,577)	(6,708)
	(40,951)	(48,056)	(52,009)
Income before income taxes	574,176	301,489	431,104
Income tax provision:			
Current	115,737	65,906	95,031
Deferred	4,071	(13,956)	(1,018)
	119,808	51,950	94,013
Net income	\$ 454,368	\$ 249,539	\$ 337,091
Average common shares	58,091	57,757	57,462
Incremental common shares attributable to outstanding stock options, restricted stock and deferred stock-based compensation	643	716	740
Average common shares and common share equivalents	58,734	58,473	58,202
Basic earnings per share	\$ 7.82	\$ 4.32	\$ 5.87
Diluted earnings per share	\$ 7.74	\$ 4.27	\$ 5.79
Dividends declared per common share	\$ 1.69	\$ 1.53	\$ 1.43

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

Consolidated Statements of Comprehensive Income

Years ended October 31, 2021, 2020 and 2019

(In thousands)

	2021	2020	2019
Net income	\$ 454,368	\$ 249,539	\$ 337,091
Components of other comprehensive income (loss), net of tax:			
Foreign currency translation adjustments	7,033	12,910	3,710
Pension and postretirement benefit plans:			
Prior service (cost) credit arising during the year	124	(6)	(148)
Net actuarial gain (loss) arising during the year	25,289	(21,607)	(63,138)
Amortization of prior service cost	(304)	(232)	(322)
Amortization of actuarial loss	14,954	12,767	6,946
Settlement loss recognized	3,187	1,931	385
Total pension and postretirement benefit plans	43,250	(7,147)	(56,277)
Total other comprehensive income (loss)	50,283	5,763	(52,567)
Total comprehensive income	\$ 504,651	\$ 255,302	\$ 284,524

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

Consolidated Balance Sheets

October 31, 2021 and 2020

(In thousands)

Assets

Current assets:	2021	2020
Cash and cash equivalents	\$ 299,972	\$ 208,293
Receivables - net	489,389	471,873
Inventories - net	327,195	277,033
Prepaid expenses and other current assets	48,282	43,798
Assets held for sale	—	19,615
Total current assets	1,164,838	1,020,612
Property, plant and equipment - net	355,565	358,618
Operating right of use lease assets	110,851	122,125
Goodwill	1,713,148	1,713,354
Intangible assets - net	357,367	407,586
Deferred income taxes	11,381	9,831
Other assets	77,811	42,530
	<u>\$ 3,790,961</u>	<u>\$ 3,674,656</u>

Liabilities and shareholders' equity

Current liabilities:		
Accounts payable	\$ 91,689	\$ 70,949
Income taxes payable	16,636	7,841
Accrued liabilities	201,992	167,883
Customer advance payments	77,868	42,323
Current maturities of long - term debt	34,188	38,043
Operating lease liability - current	17,222	16,918
Finance lease liability	5,799	5,984
Liabilities held for sale	—	13,148
Total current liabilities	445,394	363,089
Long-term debt	781,709	1,067,952
Operating lease liability - noncurrent	97,685	109,317
Finance lease liability - noncurrent	14,944	10,470
Pension obligations	80,584	165,529
Postretirement obligations	82,652	85,249
Deferred income taxes	88,467	66,995
Other long-term liabilities	40,396	47,064
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, 2021 and 2020	12,253	12,253
Capital in excess of stated value	585,334	534,684
Retained earnings	3,265,027	2,908,738
Accumulated other comprehensive loss	(175,835)	(226,118)
Common shares in treasury, at cost	(1,527,649)	(1,470,566)
Total shareholders' equity	2,159,130	1,758,991
	<u>\$ 3,790,961</u>	<u>\$ 3,674,656</u>

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

Consolidated Statements of Shareholders' Equity

Years ended October 31, 2021, 2020 and 2019

(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, 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
Reclassification due to 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
Shares issued under company stock and employee benefit plans	—	27,893	—	—	3,887	31,780
Stock-based compensation	—	22,757	—	—	—	22,757
Purchase of treasury shares (291,253 shares)	—	—	—	—	(60,970)	(60,970)
Dividends declared (\$1.69 per share)	—	—	(97,683)	—	—	(97,683)
Net income	—	—	454,368	—	—	454,368
Impact of adoption of ASU 2016-13	—	—	(396)	—	—	(396)
Other comprehensive income:						
Foreign currency translation adjustments	—	—	—	7,033	—	7,033
Defined benefit pension and post-retirement plans adjustment	—	—	—	43,250	—	43,250
October 31, 2021	\$ 12,253	\$ 585,334	\$ 3,265,027	\$ (175,835)	\$(1,527,649)	\$ 2,159,130

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

Consolidated Statements of Cash Flows

Years ended October 31, 2021, 2020 and 2019

(In thousands)

Cash flows from operating activities:	2021	2020	2019
Net income	\$ 454,368	\$ 249,539	\$ 337,091
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation	53,332	56,323	55,454
Amortization	50,551	56,979	54,790
Provision for losses on receivables	32	2,165	2,254
Deferred income taxes	4,071	(13,956)	(1,018)
Non-cash stock compensation	22,757	12,856	18,086
Loss on sale of property, plant and equipment	589	484	953
Impairment loss on assets held for sale	—	87,371	—
Other non-cash	4,907	3,729	(669)
Changes in operating assets and liabilities:			
Receivables	(13,720)	50,098	(39,992)
Inventories	(50,584)	5,785	(23,117)
Prepaid expenses	(5,209)	1,978	(2,024)
Accounts payable	20,769	(10,673)	654
Income taxes payable	8,659	(7,816)	(3,832)
Accrued liabilities	32,929	6,360	(14,027)
Customer advance payments	36,167	(619)	2,193
Other - principally pension plan	(73,691)	1,818	(3,903)
Net cash provided by operating activities	545,927	502,421	382,893
Cash flows from investing activities:			
Additions to property, plant and equipment	(38,303)	(50,535)	(64,244)
Proceeds from sale of property, plant and equipment	163	840	1,285
Acquisition of businesses, net of cash acquired	—	(142,414)	(12,486)
Other	4,971	(2,000)	(844)
Net cash used in investing activities	(33,169)	(194,109)	(76,289)
Cash flows from financing activities:			
Proceeds from long-term debt	9,414	165,734	186,635
Repayment of long-term debt	(298,830)	(319,550)	(254,473)
Repayment of capital lease obligations	(6,624)	(7,605)	(4,859)
Payment of debt issuance costs	—	—	(1,742)
Issuance of common shares	31,780	50,853	26,020
Purchase of treasury shares	(60,970)	(52,614)	(120,510)
Dividends paid	(97,683)	(88,347)	(82,145)
Net cash used in financing activities	(422,913)	(251,529)	(251,074)
Effect of exchange rate changes on cash	1,834	346	(44)
Increase in cash and cash equivalents	91,679	57,129	55,486
Cash and cash equivalents at beginning of year	208,293	151,164	95,678
Cash and cash equivalents at end of year	\$ 299,972	\$ 208,293	\$ 151,164

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 100%-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, 2021 and 2020 were not material.

However, for certain contracts related to the sale of customer-specific products within our Advanced Technology Solutions segment, revenue is recognized 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, 2021 or 2020. Revenue recognized over time represented approximately ten percent of our overall consolidated revenues at October 31, 2021 or 2020.

Revenue is measured as the amount of consideration we expect to receive in exchange for transferring products or services. Taxes, including sales and value add, that 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 and are not material. 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.

Notes to Consolidated Financial Statements — (Continued)

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 \$5,986, \$7,174 and \$10,479 in 2021, 2020 and 2019, 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 \$59,422, \$63,591 and \$60,018 in 2021, 2020 and 2019, respectively. As a percentage of sales, research and development expenses were 2.5, 3.0 and 2.7 percent in 2021, 2020 and 2019, 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 46 common shares were excluded from the diluted earnings per share calculation in 2021 and 95 and 176 options were excluded from the calculation of diluted earnings per share in 2020 and 2019, respectively because their effect would have been anti-dilutive. 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 and cash equivalents — 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.

Our primary allowance for credit losses is the allowance for doubtful accounts, which is principally determined based on aging of receivables. Receivables are exposed to credit risk based on the customers' ability to pay which is influenced by, among other factors, their financial liquidity. We perform ongoing customer credit evaluation to maintain sufficient allowances for potential credit losses. Our segments perform credit evaluation and monitoring to estimate and manage credit risk through the review of customer information, credit ratings, approval and monitoring of customer credit limits, and assessment of market conditions. We may also require prepayments or bank guarantees from customers to mitigate credit risk. Our receivables are generally short-term in nature with a majority of receivables outstanding less than 90 days. Accounts receivable balances are written-off against the allowance if deemed uncollectible.

Accounts receivable are net of an allowance for credit losses of \$7,552 and \$9,045 at October 31, 2021 and October 31, 2020, respectively. The change in the allowance for expected credit losses includes an immaterial accounting standard adoption impact from ASU 2016-13 of \$396 for the twelve months ended October 31, 2021. The provision for losses on receivables was \$32 for the twelve months ended October 31, 2021, respectively, compared to \$2,165 for the same periods a year ago, respectively. The remaining change in the allowance for credit losses is principally related to the write-off of uncollectible accounts.

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 16 percent of consolidated inventories at October 31, 2021 and 19 percent of consolidated inventories at October 31, 2020. The first-in, first-out (FIFO) method is used for all other inventories. Consolidated inventories would have been \$4,216 and \$4,545 higher than reported at October 31, 2021 and 2020, 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.

Notes to Consolidated Financial Statements — (Continued)

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 2021, 2020 or 2019.

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, 2021, 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, 2021 and 2020 consisted of:

	Cumulative translation adjustments	Pension and postretirement benefit plan adjustments	Accumulated other comprehensive loss
Balance at October 31, 2020	\$ (40,422)	\$ (185,696)	\$ (226,118)
Pension and postretirement plan changes, net of tax of \$(12,938)	—	43,250	43,250
Currency translation losses	7,033	—	7,033
Balance at October 31, 2021	<u>\$ (33,389)</u>	<u>\$ (142,446)</u>	<u>\$ (175,835)</u>

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.

Notes to Consolidated Financial Statements — (Continued)

Following is a reconciliation of the product warranty liability as of October 31, 2021 and 2020:

	2021	2020
Balance at beginning of year	\$ 10,550	\$ 11,006
Accruals for warranties	16,011	11,662
Warranty payments	(15,475)	(12,330)
Currency adjustments	27	212
Balance at end of year	<u>\$ 11,113</u>	<u>\$ 10,550</u>

Note 2 — Recently issued accounting standards

New accounting guidance adopted:

In June 2016, the Financial Accounting Standards Board (FASB) issued ASU 2016-13, “Financial Instruments – Credit Losses (Topic 326),” which changed the impairment model for most financial instruments. Prior guidance required the recognition of credit losses based on an incurred loss impairment methodology that reflected losses once the losses are probable. We adopted the new standard on November 1, 2020 and are now applying a current expected credit loss model that requires recognizing an estimate of credit losses that are expected to occur over the life of the financial instruments that are in the scope of the update, including trade receivables. The standard requires judgment and consideration of historical information, current information, and reasonable and supportable forecasts, as well as the impact of any prepayments. In addition, we reviewed our business processes and controls to support the recognition and disclosure as required under the new standard. The adoption of this new standard did not have a material impact on our Consolidated Financial Statements.

In August 2018, the FASB issued ASU 2018-15, “Intangibles – Goodwill and Other Internal – Use Software (Subtopic 350-40),” which is 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. Hosted arrangements deemed to be in scope will follow the capitalization criteria for implementation costs as though they were internal-use computer software. There may be multiple elements besides the software license (such as: training, future upgrades, data conversion, and other elements) which require the allocation of the contract price to each of the elements; entities are to capitalize only those elements which meet the capitalization criteria. Capitalized implementation costs are amortized over the term of the hosted arrangement including consideration for renewal or termination options. In addition, we reviewed our business processes and controls to support the recognition and disclosure as required under the new standard. The adoption of this new standard did not have a material impact on our Consolidated Financial Statements.

In August 2018, the FASB issued ASU 2018-14, “Compensation – Retirement Benefits – Defined Benefit Plans – General (Subtopic 715-20),” 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. We adopted the new standard and revised disclosures as reflected in Note 7 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

Notes to Consolidated Financial Statements — (Continued)

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.

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. We adopted the new standard on November 1, 2020 with no material impact to the 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 was not tax deductible. This acquisition is being reported in our Advanced Technology Solutions segment and the results of vivaMOS were not material to our Consolidated Financial Statements.

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 was tax deductible. This acquisition is being reported in our Advanced Technology Solutions segment and the results for Fluortek were not material to the our Consolidated Financial Statements.

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.

Note 4 — Divestiture

In the fourth quarter of 2020, we committed to a plan to sell our screws and barrels product line within our Industrial Precision Solutions operating segment and determined the criteria to be classified as held for sale were met. We entered into a letter of intent to sell the screws and barrels product line in October 2020, and in December 2020, we entered into a definitive agreement with the buyer. The assets and liabilities were presented as held for sale in the Condensed Consolidated Balance Sheets and measured at the lower of carrying value or fair value less cost to sell from October 31, 2021 until the transaction was completed on February 1, 2021.

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 in 2020.

Notes to Consolidated Financial Statements — (Continued)

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	<u>\$ 19,615</u>
Accounts payable	\$ 4,625
Accrued liabilities	3,352
Other liabilities	5,171
Liabilities held for sale	<u>\$ 13,148</u>

Excluding the non-cash, assets held for sale impairment charge 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. There were no significant adjustments in 2021 to the loss recognized in 2020.

Notes to Consolidated Financial Statements — (Continued)

Note 5 — Details of Consolidated Balance Sheet

	2021	2020
Receivables:		
Accounts	\$ 479,594	\$ 445,360
Notes	2,504	4,592
Other	14,843	30,966
	<u>496,941</u>	<u>480,918</u>
Allowance for doubtful accounts	(7,552)	(9,045)
	<u>\$ 489,389</u>	<u>\$ 471,873</u>
Inventories:		
Raw materials and component parts	\$ 111,089	\$ 94,630
Work-in-process	54,557	44,403
Finished goods	211,628	183,860
	<u>377,274</u>	<u>322,893</u>
Obsolescence and other reserves	(45,863)	(41,315)
LIFO reserve	(4,216)	(4,545)
	<u>\$ 327,195</u>	<u>\$ 277,033</u>
Property, plant and equipment:		
Land	\$ 9,238	\$ 8,816
Land improvements	4,786	4,611
Buildings	263,399	253,621
Machinery and equipment	491,180	464,171
Enterprise management system	50,532	56,103
Construction-in-progress	32,719	29,897
Leased property under finance leases	37,506	32,590
	<u>889,360</u>	<u>849,809</u>
Accumulated depreciation and amortization	(533,795)	(491,191)
	<u>\$ 355,565</u>	<u>\$ 358,618</u>
Accrued liabilities:		
Salaries and other compensation	\$ 87,066	\$ 52,260
Pension and retirement	5,622	10,282
Taxes other than income taxes	13,095	13,346
Customer commissions	10,460	9,158
Other	85,749	82,837
	<u>\$ 201,992</u>	<u>\$ 167,883</u>

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

Notes to Consolidated Financial Statements — (Continued)

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 2021, 2020 and 2019, the fair value of each reporting unit exceeded its carrying value, and accordingly, we did not record any goodwill impairment charges in 2021, 2020 or 2019.

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

Changes in the carrying amount of goodwill during 2021 by operating segment:

	Industrial Precision Solutions	Advanced Technology Solutions	Total
Balance at October 31, 2020	\$ 415,862	\$ 1,297,492	\$ 1,713,354
Currency effect	(842)	636	(206)
Balance at October 31, 2021	<u>\$ 415,020</u>	<u>\$ 1,298,128</u>	<u>\$ 1,713,148</u>

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
Acquisition	—	90,441	90,441
Other	(453)	—	(453)
Currency effect	4,854	3,773	8,627
Balance at October 31, 2020	<u>\$ 415,862</u>	<u>\$ 1,297,492</u>	<u>\$ 1,713,354</u>

Accumulated impairment losses, which were recorded in 2009, were \$232,789 of which \$229,173 related to the Advanced Technology Solutions segment and \$3,616 related to the Industrial Precision Solutions segment.

The Other activity above reflects an allocation of goodwill to the disposal group classified as held for sale in 2020.

Notes to Consolidated Financial Statements — (Continued)

Information regarding intangible assets subject to amortization:

	October 31, 2021		
	Carrying Amount	Accumulated Amortization	Net Book Value
Customer relationships	\$ 483,815	\$ 226,658	\$ 257,157
Patent/technology costs	154,267	89,299	64,968
Trade names	74,301	39,858	34,443
Noncompete agreements	9,896	9,099	797
Other	1,385	1,383	2
Total	\$ 723,664	\$ 366,297	\$ 357,367

	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 names	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

Amortization expense for 2021, 2020 and 2019 was \$50,551, \$56,979 and \$54,790, respectively.

Estimated amortization expense for each of the five succeeding years:

Year	Amounts
2022	\$ 46,696
2023	\$ 45,355
2024	\$ 39,784
2025	\$ 38,796
2026	\$ 37,530

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 2021, 2020 and 2019 was approximately \$22,983, \$20,265 and \$22,573, 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.

Notes to Consolidated Financial Statements — (Continued)

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	
	2021	2020	2021	2020
Change in benefit obligation:				
Benefit obligation at beginning of year	\$ 615,768	\$ 551,997	\$ 104,849	\$ 97,990
Service cost	22,555	20,635	2,120	2,099
Interest cost	13,652	15,824	887	1,025
Participant contributions	—	—	80	83
Amendments	—	—	15	—
Settlements	(9,016)	(4,992)	(714)	—
Curtailments	(2,436)	—	—	—
Foreign currency exchange rate change	—	—	1,024	2,814
Actuarial loss (gain)	4,561	47,788	(121)	2,729
Benefits paid	(17,813)	(15,484)	(2,091)	(1,891)
Benefit obligation at end of year	\$ 627,271	\$ 615,768	\$ 106,049	\$ 104,849
Change in plan assets:				
Beginning fair value of plan assets	\$ 510,250	\$ 448,931	\$ 45,476	\$ 39,640
Actual return on plan assets	62,063	41,712	243	3,697
Company contributions	94,105	40,083	3,318	3,365
Participant contributions	—	—	80	83
Settlements	(9,016)	(4,992)	(714)	—
Foreign currency exchange rate change	—	—	962	582
Benefits paid	(17,813)	(15,484)	(2,091)	(1,891)
Ending fair value of plan assets	\$ 639,589	\$ 510,250	\$ 47,274	\$ 45,476
Funded status at end of year	\$ 12,318	\$ (105,518)	\$ (58,775)	\$ (59,373)
Amounts recognized in financial statements:				
Noncurrent asset	\$ 30,840	\$ 3,162	\$ 4,086	\$ 3,321
Accrued benefit liability	(799)	(5,211)	—	(634)
Long-term pension obligations	(17,723)	(103,469)	(62,861)	(62,060)
Total amount recognized in financial statements	\$ 12,318	\$ (105,518)	\$ (58,775)	\$ (59,373)

The net actuarial loss included in the projected benefit obligation for the United States pension plans for 2021 was primarily due to updated census data partially offset by gains due to changes in the discount rates. The net actuarial loss included in the projected benefit obligation for 2020 was primarily due to lower discount rates and updated census data and assumptions.

	United States		International	
	2021	2020	2021	2020
Amounts recognized in accumulated other comprehensive (gain) loss:				
Net actuarial loss	\$ 142,070	\$ 192,593	\$ 30,544	\$ 32,097
Prior service cost (credit)	48	(16)	(1,808)	(2,137)
Accumulated other comprehensive loss	\$ 142,118	\$ 192,577	\$ 28,736	\$ 29,960

Notes to Consolidated Financial Statements — (Continued)

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

	United States		International	
	2021	2020	2021	2020
Balance at beginning of year	\$ 192,577	\$ 178,290	\$ 29,960	\$ 31,484
Net (gain) loss arising during the year	(29,091)	30,743	1,220	305
Prior service cost arising during the year	—	—	15	—
Net gain recognized during the year	(14,885)	(14,032)	(3,144)	(2,972)
Prior service credit recognized during the year	64	84	303	290
Settlement loss	(4,111)	(2,508)	(32)	—
Curtailement	(2,436)	—	—	—
Exchange rate effect during the year	—	—	414	853
Balance at end of year	<u>\$ 142,118</u>	<u>\$ 192,577</u>	<u>\$ 28,736</u>	<u>\$ 29,960</u>

Information regarding the funded status of the Company's plans is as follows:

	United States		International	
	2021	2020	2021	2020
For plans with accumulated benefit obligation in excess of plan assets:				
Accumulated benefit obligation	\$ 16,182	\$ 508,671	\$ 85,559	\$ 85,189
Fair value of plan assets	—	444,723	32,306	30,797
For plans with projected benefit obligation in excess of plan assets:				
Projected benefit obligation	18,522	553,403	95,221	93,491
Fair value of plan assets	—	444,723	32,360	30,797

Net periodic pension costs include the following components:

	United States			International		
	2021	2020	2019	2021	2020	2019
Service cost	\$ 22,555	\$ 20,635	\$ 14,587	\$ 2,120	\$ 2,099	\$ 1,933
Interest cost	13,652	15,824	18,304	887	1,025	1,670
Expected return on plan assets	(28,410)	(24,667)	(23,341)	(1,585)	(1,273)	(1,592)
Amortization of prior service credit	(64)	(84)	(61)	(303)	(290)	(303)
Amortization of net actuarial loss	14,885	14,032	6,702	3,144	2,972	1,696
Settlement loss	4,111	2,508	—	32	—	470
Total benefit cost	<u>\$ 26,729</u>	<u>\$ 28,248</u>	<u>\$ 16,191</u>	<u>\$ 4,295</u>	<u>\$ 4,533</u>	<u>\$ 3,874</u>

Net periodic pension cost for 2021, 2020 and 2019 included settlement losses of \$4,143, \$2,508 and \$470, 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.

Notes to Consolidated Financial Statements — (Continued)

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

	United States			International		
	2021	2020	2019	2021	2020	2019
Assumptions used to determine benefit obligations at October 31:						
Discount rate	3.02 %	2.85 %	3.25 %	1.30 %	1.01 %	1.26 %
Rate of compensation increase	4.00	4.00	4.00	2.90	2.69	3.12
Assumptions used to determine net benefit costs for the years ended October 31:						
Discount rate - benefit obligation	2.85	3.25	4.53	1.01	1.26	2.14
Discount rate - service cost	3.30	3.56	4.70	0.93	1.12	1.82
Discount rate - interest cost	2.10	2.78	4.15	0.80	1.05	1.90
Expected return on plan assets	5.75	5.75	6.00	3.31	3.22	3.96
Rate of compensation increase	4.00	4.00	3.90	2.69	3.12	3.12

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 2021, 2020, and 2019 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.

The international plans include a cash balance plan with promised interest crediting rates. The weighted average crediting rates were 0.50%, 0.40% and 0.60% for 2021, 2020 and 2019.

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 within the corridor remain in other comprehensive income and are retested in subsequent measurements. 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, 2021 and 2020 is as follows:

Asset Category	United States		International	
	2021	2020	2021	2020
Equity securities	13 %	11 %	— %	— %
Debt securities	46	49	—	—
Insurance contracts	—	—	51	54
Pooled investment funds	41	39	48	44
Other	—	1	1	2
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.

Notes to Consolidated Financial Statements — (Continued)

Our United States plans comprise 93 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 2021, the target in "return-seeking assets" is 30 percent and 70 percent in longer duration fixed income assets. Plan assets are diversified across multiple 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 guidelines established with each investment manager.

Our international plans comprise 7 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, 2021 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	\$ 1,467	\$ 1,467	\$ —	\$ —	\$ 519	\$ 519	\$ —	\$ —
Money market funds	4,495	4,495	—	—	—	—	—	—
Equity securities:								
Basic materials	2,038	2,038	—	—	—	—	—	—
Consumer goods	4,360	4,360	—	—	—	—	—	—
Financial	3,753	3,753	—	—	—	—	—	—
Healthcare	4,864	4,864	—	—	—	—	—	—
Industrial goods	3,640	3,640	—	—	—	—	—	—
Technology	5,080	5,080	—	—	—	—	—	—
Utilities	—	—	—	—	—	—	—	—
Mutual funds	52,319	52,319	—	—	—	—	—	—
Fixed income securities:								
U.S. Government	89,614	4,024	85,590	—	—	—	—	—
Corporate	194,793	—	194,793	—	—	—	—	—
Other	9,619	—	9,619	—	—	—	—	—
Other types of investments:								
Insurance contracts	—	—	—	—	23,993	—	—	23,993
Other	1,494	1,494	—	—	—	—	—	—
Total investments in the fair value hierarchy	<u>\$377,536</u>	<u>\$87,534</u>	<u>\$290,002</u>	<u>\$ —</u>	<u>\$ 24,512</u>	<u>\$ 519</u>	<u>\$ —</u>	<u>\$23,993</u>
Investments measured at Net Asset Value:								
Real estate collective funds	44,056				—			
Pooled investment funds	217,997				22,762			
Total Investments at Fair Value	<u>\$639,589</u>				<u>\$ 47,274</u>			

Notes to Consolidated Financial Statements — (Continued)

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	<u>\$65,784</u>	<u>\$243,307</u>	<u>\$ —</u>	\$ 25,255	<u>\$ 759</u>	<u>\$ —</u>	<u>\$24,496</u>
Investments measured at Net Asset Value:								
Real estate collective funds	38,996				—			
Pooled investment funds	162,163				20,221			
Total Investments at Fair Value	<u>\$510,250</u>				<u>\$ 45,476</u>			

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.

Notes to Consolidated Financial Statements — (Continued)

The following tables present an analysis of changes during the years ended October 31, 2021 and 2020 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	
Beginning balance at October 31, 2020	\$	24,496
Actual return on plan assets:		
Purchases		1,441
Sales		(541)
Settlements		(714)
Unrealized losses		(440)
Foreign currency translation		(249)
Ending balance at October 31, 2021	<u>\$</u>	<u>23,993</u>

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

Contributions to pension plans in 2022 are estimated to be approximately \$4,121.

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

Year	United States	International
2022	\$ 20,460	\$ 2,860
2023	21,953	2,826
2024	23,331	3,153
2025	25,088	3,395
2026	26,570	5,458
2026-2030	156,178	19,725

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.

Notes to Consolidated Financial Statements — (Continued)

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	
	2021	2020	2021	2020
Change in benefit obligation:				
Benefit obligation at beginning of year	\$ 87,645	\$ 88,660	\$ 445	\$ 454
Service cost	778	666	15	15
Interest cost	1,805	2,345	12	13
Participant contributions	722	611	—	—
Foreign currency exchange rate change	—	—	33	(5)
Actuarial gain	(2,799)	(2,024)	(83)	(26)
Benefits paid	(2,861)	(2,613)	(6)	(6)
Benefit obligation at end of year	<u>\$ 85,290</u>	<u>\$ 87,645</u>	<u>\$ 416</u>	<u>\$ 445</u>
Change in plan assets:				
Beginning fair value of plan assets	\$ —	\$ —	\$ —	\$ —
Company contributions	2,139	2,002	6	6
Participant contributions	722	611	—	—
Benefits paid	(2,861)	(2,613)	(6)	(6)
Ending fair value of plan assets	<u>\$ —</u>	<u>\$ —</u>	<u>\$ —</u>	<u>\$ —</u>
Funded status at end of year	<u>\$ (85,290)</u>	<u>\$ (87,645)</u>	<u>\$ (416)</u>	<u>\$ (445)</u>
Amounts recognized in financial statements:				
Accrued benefit liability	\$ (3,048)	\$ (2,835)	\$ (6)	\$ (6)
Long-term postretirement obligations	(82,242)	(84,810)	(410)	(439)
Total amount recognized in financial statements	<u>\$ (85,290)</u>	<u>\$ (87,645)</u>	<u>\$ (416)</u>	<u>\$ (445)</u>
	United States		International	
	2021	2020	2021	2020
Amounts recognized in accumulated other comprehensive (gain) loss:				
Net actuarial (gain) loss	\$ 21,456	\$ 25,614	\$ (543)	\$ (466)
Prior service credit	—	—	—	—
Accumulated other comprehensive (gain) loss	<u>\$ 21,456</u>	<u>\$ 25,614</u>	<u>\$ (543)</u>	<u>\$ (466)</u>

Notes to Consolidated Financial Statements — (Continued)

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

	United States		International	
	2021	2020	2021	2020
Balance at beginning of year	\$ 25,614	\$ 28,976	\$ (466)	\$ (482)
Net gain arising during the year	(2,799)	(2,024)	(83)	(26)
Net gain (loss) recognized during the year	(1,359)	(1,355)	41	36
Prior service credit recognized during the year	—	17	—	—
Exchange rate effect during the year	—	—	(35)	6
Balance at end of year	\$ 21,456	\$ 25,614	\$ (543)	\$ (466)

Net postretirement benefit costs include the following components:

	United States			International		
	2021	2020	2019	2021	2020	2019
Service cost	\$ 778	\$ 666	\$ 545	\$ 15	\$ 15	\$ 16
Interest cost	1,805	2,345	2,984	12	13	19
Amortization of prior service credit	—	(17)	(26)	—	—	—
Amortization of net actuarial (gain) loss	1,359	1,355	634	(41)	(36)	(28)
Total benefit cost (credit)	\$ 3,942	\$ 4,349	\$ 4,137	\$ (14)	\$ (8)	\$ 7

The components of net postretirement benefit 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 postretirement benefits were as follows:

	United States			International		
	2021	2020	2019	2021	2020	2019
Assumptions used to determine benefit obligations at October 31:						
Discount rate	2.98 %	2.84 %	3.27 %	3.43 %	2.94 %	3.03 %
Health care cost trend rate	3.34	3.40	3.62	4.43	4.22	4.00
Rate to which health care cost trend rate is assumed to incline/decline (ultimate trend rate)	3.15	3.17	3.24	4.05	4.05	4.05
Year the rate reaches the ultimate trend rate	2031	2026	2026	2040	2040	2040
Assumption used to determine net benefit costs for the years ended October 31:						
Discount rate benefit obligation	2.84 %	3.27 %	4.56 %	2.94 %	3.03 %	3.88 %
Discount rate service cost	3.44	3.61	4.77	3.00	3.05	3.90
Discount rate interest cost	2.08	2.79	4.18	2.60	2.88	3.80

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.

Contributions to postretirement plans in 2022 are estimated to be approximately \$3,054.

Notes to Consolidated Financial Statements — (Continued)

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

Year	United States	International
2022	\$ 3,048	\$ 6
2023	3,227	6
2024	3,423	6
2025	3,593	6
2026	3,753	9
2026-2030	20,376	54

Note 8 — Income taxes

Income tax expense includes the following:

	2021	2020	2019
Current:			
U.S. federal	\$ 41,983	\$ 19,265	\$ 40,012
State and local	4,429	984	3,429
Foreign	69,325	45,657	51,590
Total current	115,737	65,906	95,031
Deferred:			
U.S. federal	6,631	(10,143)	1,470
State and local	1,470	(1,023)	633
Foreign	(4,030)	(2,790)	(3,121)
Total deferred	4,071	(13,956)	(1,018)
	<u>\$ 119,808</u>	<u>\$ 51,950</u>	<u>\$ 94,013</u>

Earnings before income taxes of domestic operations, which are calculated after intercompany profit eliminations, were \$287,409, \$120,054 and \$222,435 in 2021, 2020 and 2019, respectively.

Our income tax provision for 2021 included a tax benefit of \$5,982 due to our share-based payment transactions.

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, 2021.

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 be subject to U.S. taxation on 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.

Notes to Consolidated Financial Statements — (Continued)

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

	2021	2020	2019
Statutory federal income tax rate	21.00 %	21.00 %	21.00 %
Transition tax	—	—	1.46
Share-based and other compensation	(0.30)	(4.15)	(0.55)
Foreign tax rate variances, net of foreign tax credits	0.92	1.51	1.16
State and local taxes, net of federal income tax benefit	0.81	(0.01)	0.74
Amounts related to prior years	(0.18)	(0.04)	(0.55)
Foreign-Derived Intangible Income Deduction	(1.19)	(0.95)	(1.51)
Global Intangible Low-Taxed Income net of foreign tax credits	0.44	0.97	0.85
Other – net	(0.63)	(1.10)	(0.79)
Effective tax rate	<u>20.87 %</u>	<u>17.23 %</u>	<u>21.81 %</u>

Earnings before income taxes of international operations, which are calculated before intercompany profit elimination entries, were \$286,767, \$181,435 and \$208,669 in 2021, 2020 and 2019, 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 \$1,255,112 and \$1,045,389 at October 31, 2021 and 2020, 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, 2021 and 2020, total unrecognized tax benefits were \$3,720 and \$6,717, respectively. The amounts that, if recognized, would impact the effective tax rate were \$3,567 and \$5,998 at October 31, 2021 and 2020, respectively. During 2021, 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 2021, 2020 and 2019 is as follows:

	2021	2020	2019
Balance at beginning of year	\$ 6,717	\$ 2,909	\$ 2,891
Additions based on tax positions related to the current year	370	370	370
Additions for tax positions of prior years	—	4,068	547
Reductions for tax positions of prior years	(350)	—	—
Settlements	—	(137)	—
Lapse of statute of limitations	(3,017)	(493)	(899)
Balance at end of year	<u>\$ 3,720</u>	<u>\$ 6,717</u>	<u>\$ 2,909</u>

At October 31, 2021 and 2020, we had accrued interest and penalty expense related to unrecognized tax benefits of \$859 and \$2,179, 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 2018 through 2021 tax years; tax years prior to the 2018 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 2015. 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.

Notes to Consolidated Financial Statements — (Continued)

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

	2021	2020
Deferred tax assets:		
Employee benefits	\$ 39,798	\$ 70,838
Other accruals not currently deductible for taxes	17,499	16,207
Tax credit and loss carryforwards	19,269	20,268
Inventory adjustments	6,924	8,757
Total deferred tax assets	83,490	116,070
Valuation allowance	(14,141)	(22,233)
Total deferred tax assets	69,349	93,837
Deferred tax liabilities:		
Depreciation and amortization	145,494	150,591
Other - net	941	410
Total deferred tax liabilities	146,435	151,001
Net deferred tax liabilities	\$ (77,086)	\$ (57,164)

At October 31, 2021, we had \$11,128 of tax credit carryforwards, \$3,543 of which expires in 2028-2031 and \$7,585 of which has an indefinite carryforward period. We also had \$34,680 of state operating loss carryforwards, \$19,525 of foreign operating loss carryforwards, and a \$20,149 capital loss carryforward, of which \$57,758 will expire in 2022 through 2039, and \$16,596 of which has an indefinite carryforward period. The net change in the valuation allowance was a decrease of \$8,092 in 2021 and an increase of \$6,932 in 2020. The valuation allowance of \$14,141 at October 31, 2021, 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:

	2021	2020
Maximum borrowings available under bank lines of credit (all foreign banks)	\$ 60,627	\$ 74,766
Unused bank lines of credit	\$ 57,082	\$ 74,766

Note 10 — Long-term debt

A summary of long-term debt is as follows:

	2021	2020
Notes Payable	\$ 3,545	\$ —
Senior notes, due 2022-2025	79,000	109,900
Senior notes, due 2022-2027	78,572	85,714
Senior notes, due 2023-2030	350,000	350,000
Term loan	—	255,000
Euro loan, due 2023	306,358	308,642
	817,475	1,109,256
Less current maturities	34,188	38,043
Less unamortized debt issuance costs	1,578	3,261
Long-term maturities	\$ 781,709	\$ 1,067,952

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, 2021 and October 31, 2020, we had no balances outstanding under this facility.

Senior notes, due 2022-2025 — These unsecured fixed-rate notes entered into in 2012 with a group of insurance companies had a remaining weighted-average life of 1.95 years. The weighted-average interest rate at October 31, 2021 was 3.10 percent.

Notes to Consolidated Financial Statements — (Continued)

Senior notes, due 2022-2027 — These unsecured fixed-rate notes entered into in 2015 with a group of insurance companies had a remaining weighted-average life of 3.20 years. The weighted-average interest rate at October 31, 2021 was 3.08 percent.

Senior notes, due 2023-2030 — These unsecured fixed-rate notes entered in 2018 with a group of insurance companies had a remaining weighted-average life of 4.04 years. The weighted-average interest rate at October 31, 2021 was 3.90 percent.

Term loan — 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, 2021, there were no outstanding loans under this facility.

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 facility 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, 2021 was 0.71 percent.

We were in compliance with all covenants at October 31, 2021 and the amount we could borrow would not have been limited by any debt covenants.

Annual maturities — The annual maturities of long-term debt for the five years subsequent to October 31, 2021, are as follows: \$30,643 in 2022; \$437,001 in 2023; \$110,643 in 2024; \$85,643 in 2025 and \$50,000 in 2026.

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, 2021, we had no material leases that had yet to commence.

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

	October 31, 2021		October 31, 2020	
	Finance Leases	Operating Leases	Finance Leases	Operating Leases
Amortization of right of use assets	\$ 6,929		\$ 7,087	
Interest	373		350	
Lease cost ⁽¹⁾	7,302	\$ 20,176	7,437	\$ 21,489
Short-term and variable lease cost ⁽¹⁾	1,445	2,938	1,478	3,011
Total lease cost	<u>\$ 8,747</u>	<u>\$ 23,114</u>	<u>\$ 8,915</u>	<u>\$ 24,500</u>

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

Notes to Consolidated Financial Statements — (Continued)

Supplemental cash flow information is summarized below for the twelve months ended October 31, 2021:

	Finance Leases	Operating Leases
Cash outflows for leases	\$ 6,624	\$ 20,231
Weighted average remaining lease term (years)	8.29	9.88
Weighted average discount rate	2.13%	1.68%

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, 2021. The reconciliation excludes short-term leases that are not recognized on the Consolidated Balance Sheet.

Year:	Finance Leases	Operating Leases
2022	\$ 6,162	\$ 18,942
2023	4,454	16,071
2024	2,498	13,825
2025	1,449	11,717
2026	1,063	11,073
Later years	7,527	54,562
Total minimum lease payments	23,153	126,190
Amounts representing interest	2,410	11,283
Present value of minimum lease payments	<u>\$ 20,743</u>	<u>\$ 114,907</u>

Rental expense for operating leases during the fiscal years ended October 31, 2021, 2020 and 2019 was \$20,618, \$22,061 and \$19,131, respectively.

Capitalized net finance leases included in property, plant and equipment during the fiscal years ended October 31, 2021 and October 31, 2020 was \$19,745 and \$15,659, 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, 2021	Total	Level 1	Level 2	Level 3
Assets:				
Foreign currency forward contracts ^(a)	\$ 2,755	\$ —	\$ 2,755	\$ —
Total assets at fair value	<u>\$ 2,755</u>	<u>\$ —</u>	<u>\$ 2,755</u>	<u>\$ —</u>
Liabilities:				
Deferred compensation plans ^(b)	\$ 9,115	\$ —	\$ 9,115	\$ —
Foreign currency forward contracts ^(a)	4,507	—	4,507	—
Total liabilities at fair value	<u>\$ 13,622</u>	<u>\$ —</u>	<u>\$ 13,622</u>	<u>\$ —</u>

Notes to Consolidated Financial Statements — (Continued)

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	\$ —

- (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.

	2021		2020	
	Carrying Amount	Fair Value	Carrying Amount	Fair Value
Long-term debt (including current portion)	\$ 812,352	\$ 855,376	\$ 1,105,995	\$ 1,170,073

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 2021, we recognized net gains of \$1,485 on foreign currency forward contracts and net losses of \$7,411 from the change in fair value of balance sheet positions. 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. The fair values of our foreign currency forward contract assets and liabilities are included in Receivables-net and Accrued liabilities, respectively in the Consolidated Balance Sheets.

Notes to Consolidated Financial Statements — (Continued)

The following table summarizes, by currency, the contracts outstanding at October 31, 2021 and 2020:

	Notional Amounts	
	Sell	Buy
October 31, 2021 contract amounts:		
Euro	\$ 100,922	\$ 325,581
Pound sterling	50,333	79,934
Japanese yen	14,338	45,436
Australian dollar	709	10,088
Hong Kong dollar	6,948	44,831
Singapore dollar	200	18,029
Others	16,367	86,492
Total	<u>\$ 189,817</u>	<u>\$ 610,391</u>
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	<u>\$ 255,779</u>	<u>\$ 552,966</u>

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, 2021 and 2020, 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 2021, 2020 or 2019.

Common — We have 160,000 authorized common shares without par value. At October 31, 2021 and 2020, there were 98,023 common shares issued. At October 31, 2021 and 2020, the number of outstanding common shares, net of treasury shares, was 58,154 and 58,081, respectively.

Common shares repurchased as part of publicly announced programs during 2021, 2020 and 2019 were as follows:

Year	Number of Shares	Total Amount	Average per Share
2021	262	55,033	\$ 209.97
2020	303	38,138	\$ 125.70
2019	949	114,790	\$ 121.01

These amounts exclude share repurchases associated with employee equity award exercises and vesting.

Note 15 — Stock-based compensation

During the 2021 Annual Meeting of Shareholders, our shareholders approved the Nordson Corporation 2021 Stock Incentive and Award Plan (the "2021 Plan") as the successor to the Amended and Restated 2012 Stock Incentive and Award Plan (the "2012 Plan"). The 2021 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 900 common shares were authorized for grant under the 2021 Plan plus the number of shares that were available to be granted under the 2012 Plan. As of October 31, 2021, a total of 2,253 common shares were available to be granted under the 2021 Plan.

Notes to Consolidated Financial Statements — (Continued)

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 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 \$6,946, \$10,087 and \$10,067 for 2021, 2020 and 2019, respectively.

The following table summarizes activity related to stock options during 2021:

	Number of Options	Weighted-Average Exercise Price Per Share	Aggregate Intrinsic Value	Weighted-Average Remaining Term
Outstanding at October 31, 2020	1,487	\$ 122.45		
Granted	93	\$ 201.43		
Exercised	(298)	\$ 107.14		
Forfeited or expired	(47)	\$ 152.52		
Outstanding at October 31, 2021	<u>1,235</u>	\$ 130.93	\$ 152,304	6.1 years
Expected to vest	561	\$ 155.55	\$ 55,335	7.3 years
Exercisable at October 31, 2021	671	\$ 110.21	\$ 96,638	5.0 years

Summarized information on currently outstanding options follows:

	Range of Exercise Price		
	\$43 - \$90	\$91 - \$140	\$141 - \$201
Number outstanding	204	626	405
Weighted-average remaining contractual life, in years	3.1	6.3	8.3
Weighted-average exercise price	\$ 71.82	\$ 122.31	\$ 174.09
Number exercisable	204	399	68
Weighted-average exercise price	\$ 71.82	\$ 120.24	\$ 167.15

As of October 31, 2021, there was \$8,003 of total unrecognized compensation cost related to unvested stock options. That cost is expected to be amortized over a weighted average period of approximately 1.1 years.

The fair value of each option grant was estimated at the date of the grant using the Black-Scholes option-pricing model with the following assumptions:

	2021	2020	2019
Expected volatility	30.8%-32.6%	24.5%-30.5%	24.1%-24.5%
Expected dividend yield	0.83%-0.85%	0.87%-1.16%	1.04%
Risk-free interest rate	0.43%-0.77%	0.44%-1.69%	2.84%-2.95%
Expected life of the option (in years)	5.3-6.2	5.3-6.3	5.3-6.2

The weighted-average expected volatility used to value options granted in 2021, 2020 and 2019 was 31.0 percent, 25.4 percent and 24.3 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 2021, 2020 and 2019 was \$56.02, \$38.57 and \$31.74, respectively.

The total intrinsic value of options exercised during 2021, 2020 and 2019 was \$32,791, \$65,783 and \$31,881, respectively.

Cash received from the exercise of stock options for 2021, 2020 and 2019 was \$31,780, \$50,853 and \$26,020, respectively.

Notes to Consolidated Financial Statements — (Continued)

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. We may also grant continuation awards in the form of restricted share units with cliff vesting and a gateway performance measure that must be achieved for the restricted share units to vest.

For employee recipients, in the event of termination of employment due to early retirement, with consent of the Company, restricted shares and units granted within 12 months prior to termination are forfeited, and other restricted shares and units vest on a pro-rata basis, subject to the consent of the Compensation Committee. In the event of termination of employment due to normal retirement at age 65, restricted shares and units granted within 12 months prior to termination are forfeited, and, for other restricted shares and units, the restriction period applicable to restricted shares will lapse and the shares will vest and be transferable and all unvested units will become vested in full, subject to the consent of the Compensation Committee. In the event of a recipient's disability or death, all restricted shares and units granted within 12 months prior to termination fully vest. Termination for any other reason prior to the lapse of any restrictions or vesting of units results in forfeiture of the shares or units.

For non-employee directors, all restrictions lapse in the event of disability or death of the non-employee director. 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 2021:

	Number of Shares	Weighted-Average Grant Date Fair Value Per Share
Restricted at October 31, 2020	58	\$ 148.75
Granted	—	\$ —
Forfeited	(6)	\$ 162.94
Vested	(33)	\$ 141.32
Restricted at October 31, 2021	<u>19</u>	<u>\$ 157.36</u>

As of October 31, 2021, there was \$1,409 of unrecognized compensation cost related to restricted shares. The cost is expected to be amortized over a weighted average period of 0.7 years. The amount charged to expense related to restricted shares was \$2,054, \$3,956 and \$3,608 in 2021, 2020 and 2019, respectively. These amounts included common share dividends of \$43, \$87 and \$84 in 2021, 2020 and 2019, respectively.

The following table summarizes activity related to restricted share units in 2021:

	Number of Units	Weighted-Average Grant Date Fair Value
Restricted share units at October 31, 2020	—	\$ —
Granted	87	\$ 202.41
Forfeited	(14)	\$ 202.06
Vested	(6)	\$ 198.58
Restricted share units at October 31, 2021	<u>67</u>	<u>\$ 202.81</u>

As of October 31, 2021, there was \$8,573 of remaining expense to be recognized related to outstanding restricted share units, which is expected to be recognized over a weighted average period of 0.9 years. The amounts charged to expense related to restricted share units in 2021, 2020 and 2019 were \$6,264, \$1,181 and \$1,052, respectively. Restricted share unit expense increased in 2021 compared to prior years as the granting of restricted share units has generally replaced the granting of stock options for key employees.

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 and the percentage of the requisite service that has been rendered. The calculations are based upon the grant date fair value which is principally driven by the stock price on the date of grant or a Monte Carlo valuation for awards granted in 2021. The per share values were \$202.05 for 2021;

Notes to Consolidated Financial Statements — (Continued)

\$201.50 modified per share value compared to original per share values of \$160.02, \$133.01 and \$184.04 for 2020; and \$120.12 and \$138.53 for 2019. The amount charged to expense for executive officers and selected other key employees in 2021 was \$7,178. The amount credited to expense in 2020 was \$2,732 and the amount charged to expense in 2019 was \$2,989. The cumulative amount recorded in shareholders' equity at October 31, 2021 and 2020 was \$7,015 and \$1,557, respectively. As of October 31, 2021, there was \$15,271 of unrecognized compensation cost related to performance share incentive awards.

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 \$96, \$276 and \$300 for 2021, 2020 and 2019, 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 2021:

	Number of Shares	Weighted-Average Grant Date Fair Value Per Share
Outstanding at October 31, 2020	120	\$ 60.81
Restricted stock units vested	4	\$ 199.36
Dividend equivalents	1	\$ 215.03
Distributions	(19)	\$ 58.86
Outstanding at October 31, 2021	<u>106</u>	<u>\$ 68.11</u>

The amount charged to expense related to director deferred compensation was \$262, \$175 and \$154 in 2021, 2020 and 2019, respectively.

Shares reserved for future issuance — At October 31, 2021, there were 1,835 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

Notes to Consolidated Financial Statements — (Continued)

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 2021, 2020 or 2019.

The following table presents information about our reportable segments:

	Industrial Precision Solutions	Advanced Technology Solutions	Corporate	Total
Year ended October 31, 2021				
Net external sales	\$ 1,246,947	\$ 1,115,262	\$ —	\$ 2,362,209
Depreciation and amortization	25,673	68,426	9,784	103,883
Operating profit (loss)	414,192	271,660	(70,725)	615,127
Identifiable assets ^(b)	898,051	1,902,637	967,796 ^(a)	3,768,484
Property, plant and equipment expenditures	9,009	23,064	6,230	38,303
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	18,545	31,520	470	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

- (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 in 2020, see Note 4.
- (b) Operating segment identifiable assets include notes and accounts receivable net of allowance for doubtful accounts, inventories net of reserves, property, plant and equipment net of accumulated depreciation and goodwill.

Notes to Consolidated Financial Statements — (Continued)

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

	<u>2021</u>	<u>2020</u>	<u>2019</u>
Net external sales			
United States	\$ 789,303	\$ 755,642	\$ 758,383
Americas	179,807	141,473	167,661
Europe	617,492	536,636	571,596
Japan	107,572	126,601	126,756
Asia Pacific	668,035	560,748	569,830
Total net external sales	<u>\$ 2,362,209</u>	<u>\$ 2,121,100</u>	<u>\$ 2,194,226</u>
Long-lived assets			
United States	\$ 311,254	\$ 329,390	\$ 286,894
Americas	11,624	2,307	1,948
Europe	67,776	69,854	44,041
Japan	18,318	22,733	6,169
Asia Pacific	57,444	56,459	59,843
Total long-lived assets	<u>\$ 466,416</u>	<u>\$ 480,743</u>	<u>\$ 398,895</u>

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 in 2020, 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:

	<u>2021</u>	<u>2020</u>	<u>2019</u>
Total profit for reportable segments	\$ 615,127	\$ 349,545	\$ 483,113
Interest expense	(25,491)	(32,160)	(47,145)
Interest and investment income	2,150	1,681	1,844
Other-net	(17,610)	(17,577)	(6,708)
Income before income taxes	<u>\$ 574,176</u>	<u>\$ 301,489</u>	<u>\$ 431,104</u>

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

	<u>2021</u>	<u>2020</u>	<u>2019</u>
Total identifiable assets for reportable segments	\$ 3,768,484	\$ 3,680,385	\$ 3,519,907
Customer advance payments	77,868	42,323	41,131
Eliminations	(55,391)	(48,052)	(44,591)
Total consolidated assets	<u>\$ 3,790,961</u>	<u>\$ 3,674,656</u>	<u>\$ 3,516,447</u>

Note 17 — Supplemental information for the statement of cash flows

	<u>2021</u>	<u>2020</u>	<u>2019</u>
Cash operating activities:			
Interest paid	\$ 27,122	\$ 31,095	\$ 50,578
Income taxes paid	106,942	80,849	104,326

Notes to Consolidated Financial Statements — (Continued)

Note 18 — 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. In November 2021, we received final court approval of the settlement on the previously agreed upon terms. Management believes, based on currently available information, that the ultimate outcome of the proceeding described above will not have a material adverse effect on our 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, 2021 and October 31, 2020, our accrual for the ongoing operation, maintenance and monitoring obligation at the Site was \$319 and \$360, 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.

Note 19 — Subsequent Events

On August 24, 2021, we entered into an agreement to acquire NDC Technologies (NDC), a leading global provider of precision measurement solutions for in-line manufacturing process control. NDC's technology portfolio includes in-line measurement sensors, gauges and analyzers using near-infrared, laser, X-ray, optical and nucleonic technologies, as well as proprietary algorithms and software. The acquisition, which was completed on November 1, 2021, expanded our test and inspection platform and will be reported in our Advanced Technology Solutions segment. The all-cash transaction of approximately \$180,000 was funded using cash from operations and is not expected to have a material impact on our consolidated financial statements.

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, 2021.

Based on our assessment, management concluded that our internal control over financial reporting was effective as of October 31, 2021.

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, 2021. Their report is included herein.

/s/ Sundaram Nagarajan

President and Chief Executive Officer

December 17, 2021

/s/ Joseph P. Kelley

Executive Vice President, Chief Financial Officer

December 17, 2021

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, 2021, 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, 2021, based on the COSO criteria.

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, 2021 and 2020, 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, 2021, and the related notes and financial statement schedule listed in the Index at Item 15(a) and our report dated December 17, 2021 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 17, 2021

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, 2021 and 2020, 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, 2021, 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, 2021 and 2020, and the results of its operations and its cash flows for each of the three years in the period ended October 31, 2021, 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, 2021, 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 17, 2021 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, 2021, the Company had \$1,713,148 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 2021. 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 17, 2021

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, 2021. 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, 2021 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 and are incorporated by reference.
- (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 2021 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Item 9B. Other Information

None.

Item 9C. Disclosures Regarding Foreign Jurisdictions that Prevent Inspections

Not applicable.

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 2025” 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 2022 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 2022 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 annual 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 2022 Annual Meeting of Shareholders, along with the sections captioned “Directors Compensation,” “Summary Compensation for Fiscal Year 2021,” “Grants of Plan-Based Awards,” “Outstanding Equity Awards at October 31, 2021,” “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 2022 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 2022 Annual Meeting of Shareholders.

Equity Compensation Plan Information

The following table sets forth (in whole shares) information regarding equity compensation plans in effect as of October 31, 2021:

Plan category	Number of securities to be issued upon exercise of outstanding options, warrants and rights (1)	Weighted-average exercise price of outstanding options, warrants and rights (2)	Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in first reporting column) (3)
Equity compensation plans approved by security holders	1,628,707	\$ 130.93	2,253,249
Equity compensation plans not approved by security holders	—	—	—
Total	1,628,707	\$ 130.93	2,253,249

- (1) The number of shares reported may overstate dilution due to the inclusion of performance-based awards at their maximum payout level.
- (2) Full value equity awards such as performance share incentive awards are not taken into account in the weighted-average price, as such awards have no exercise price.
- (3) As of October 31, 2021, includes shares available for future issuance under the 2021 Plan, including for awards other than options, warrants and rights.

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 2022 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 2022 Annual Meeting of Shareholders.

PART IV

Item 15. Exhibits and Financial Statement Schedules

The following are filed as part of this annual 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, 2021

Consolidated Statements of Comprehensive Income for each of the three years in the period ended October 31, 2021

Consolidated Balance Sheets as of October 31, 2021 and October 31, 2020

Consolidated Statements of Shareholders' Equity for each of the three years in the period ended October 31, 2021

Consolidated Statements of Cash Flows for each of the three years in the period ended October 31, 2021

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, 2021.

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.

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-e-4	Nordson Corporation 2005 Excess Defined Benefit Pension Plan (First Amendment Effective July 9, 2009 filed herewith)*
10-e-5	Nordson Corporation 2005 Excess Defined Benefit Pension Plan (Second Amendment Effective July 1, 2021 filed herewith)*
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-g-8	Nordson Corporation 2021 Stock Incentive and Award Plan (incorporated herein by reference to Exhibit 10.1 to Registrant's Form 8-K dated March 2, 2021)*
10-g-9	Nordson Corporation 2021 Stock Incentive and Award Plan, Form of Notice of Award - Key Employees (incorporated herein by reference to Exhibit 10.1 to Registrant's Form 8-K dated April 19, 2021)*
10-g-10	Nordson Corporation 2021 Stock Incentive and Award Plan, Form of Notice of Award - Executive Officers (incorporated herein by reference to Exhibit 10.2 to Registrant's Form 8-K dated April 19, 2021)*
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)*
10-m	Separation agreement between John J. Keane and Nordson Corporation, effective February 1, 2021 (incorporated herein by reference to Exhibit 10.1 to Registrant's Form 10-Q dated March 4, 2021)
(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

NORDSON CORPORATION
Index to Exhibits

Exhibit Number	Description
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)
101	The following financial information from Nordson Corporation's Annual Report on Form 10-K for the year ended October 31, 2021, formatted in inline Extensible Business Reporting Language (iXBRL): (i) the Consolidated Statements of Income for the years ended October 31, 2021, 2020 and 2019, (ii) the Consolidated Statements of Comprehensive Income for the years ended October 31, 2021, 2020 and 2019, (iii) the Consolidated Balance Sheets at October 31, 2021 and 2020, (iv) the Consolidated Statements of Changes in Shareholders' Equity for the years ended October 31, 2021, 2020 and 2019, (v) the Consolidated Statements of Cash Flows for the years ended October 31, 2021, 2020 and 2019, 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, 2021, 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 SEC 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 17, 2021

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.

<u>Signatures</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Sundaram Nagarajan</u> Sundaram Nagarajan	Director, President and Chief Executive Officer (Principal Executive Officer)	December 17, 2021
<u>/s/ Joseph P. Kelley</u> Joseph P. Kelley	Executive Vice President, Chief Financial Officer (Principal Financial Officer) (Principal Accounting Officer)	December 17, 2021
<u>/s/ Michael J. Merriman, Jr.</u> Michael J. Merriman, Jr.	Chair of the Board	December 17, 2021
<u>/s/ Dr. John A. DeFord</u> Dr. John A. DeFord	Director	December 17, 2021
<u>/s/ Arthur L. George, Jr.</u> Arthur L. George, Jr.	Director	December 17, 2021
<u>/s/ Frank M. Jaehnert</u> Frank M. Jaehnert	Director	December 17, 2021
<u>/s/ Ginger M. Jones</u> Ginger M. Jones	Director	December 17, 2021
<u>/s/ Jennifer A. Parmentier</u> Jennifer A. Parmentier	Director	December 17, 2021
<u>/s/ Mary G. Puma</u> Mary G. Puma	Director	December 17, 2021
<u>/s/ Victor L. Richey, Jr.</u> Victor L. Richey, Jr.	Director	December 17, 2021

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					
2019	\$ 9,580	2,254	1,840	(193)	\$ 9,801
2020	\$ 9,801	2,165	3,074	153	\$ 9,045
2021	\$ 9,045	32	1,572	47	\$ 7,552
Inventory Obsolescence and Other Reserves					
2019	\$ 37,545	10,623	8,720	(71)	\$ 39,377
2020	\$ 39,377	24,767	23,255	426	\$ 41,315
2021	\$ 41,315	11,718	7,436	266	\$ 45,863

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:

<u>Name</u>	<u>Jurisdiction of Incorporation</u>
UNITED STATES:	
Nordson DAGE, Inc.	California
Nordson MARCH, Inc.	California
Nordson YESTECH, Inc.	California
Value Plastics, Inc. dba Nordson MEDICAL	Colorado
Avalon Laboratories Holding Corp.	Delaware
EDI Holdings, Inc.	Delaware
Nordson BKG LLC	Delaware
Nordson Superior 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
Sonoscan, Inc.	Delaware
Vention Medical Acquisition Co.	Delaware
VP Acquisition 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
Realty Land Conservancy III LLC	Ohio
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

<u>Name</u>	<u>Jurisdiction of Incorporation</u>
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
Nordson (China) Co., Ltd.	China
Nordson (Shanghai) Business Consulting Co., Ltd.	China
Nordson China Business Trust	China
Nordson PPS (Shanghai) Co. Ltd.	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
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 Advanced Technology (Japan) K.K.	Japan
Nordson K.K.	Japan
Nordson European Holdings Luxembourg S.à r.l.	Luxembourg
Nordson Luxembourg S.à r.l.	Luxembourg

Name**Jurisdiction of Incorporation****INTERNATIONAL:**

Nordson S.à r.l.	Luxembourg
Nordson (Malaysia) Sdn. Bhd.	Malaysia
Nordson de Mexico, S.A. de C.V.	Mexico
Nordson de Mexico Trading, S.A. de C.V.	Mexico
Nordson MEDICAL S.A. de C.V. (Mexico)	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
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
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
Nordson Internacional 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,
6. Registration Statement (Form S-8 No. 333-225378) pertaining to the Amended and Restated Nordson Corporation 2012 Stock Incentive and Award Plan; and
7. Registration Statement (Form S-8 No. 333-254753) pertaining to the Nordson Corporation 2021 Stock Incentive and Award Plan

of our reports dated December 17, 2021, 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, 2021.

/s/ Ernst & Young LLP

Ernst & Young LLP

Cleveland, Ohio
December 17, 2021

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 17, 2021

/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 17, 2021

/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, 2021, 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 to my knowledge:

- (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 17, 2021

/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, 2021, 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 to my knowledge:

- (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 17, 2021

/s/ Joseph P. Kelley

Joseph P. Kelley

Executive Vice President, Chief Financial Officer

2021

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