

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

FORM 10-K

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

For the fiscal year ended December 31, 2020
or

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

For the transition period from _____ to _____
Commission File No. 001-35083

NOVANTA INC.

(Exact name of registrant as specified in its charter)

New Brunswick, Canada
(State or other jurisdiction
of incorporation or organization)
125 Middlesex Turnpike
Bedford, Massachusetts, USA
(Address of principal executive offices)

98-0110412
(I.R.S. Employer
Identification No.)
01730
(Zip Code)

(781) 266-5700

(Registrant's telephone number, including area code)

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

Title of each class

Common shares, no par value

Trading Symbol(s)

NOVT

Name of each exchange on which registered

The Nasdaq Global Select Market

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

None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. YES ☒ NO ☐

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. YES ☐ NO ☒

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

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (Section 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 the Registrant's outstanding common shares held by non-affiliates of the Registrant, based on the closing price of the common shares on the Nasdaq Global Select Market on the last business day of the Registrant's most recently completed second fiscal quarter (July 3, 2020) was \$3,653,922,136. For purposes of this disclosure, common shares held by officers and directors of the Registrant and by persons who hold more than 10% of the Registrant's outstanding common shares have been excluded because such persons may be deemed to be affiliates. This determination of affiliate status is not necessarily conclusive.

As of February 22, 2021, there were 35,310,472 shares of the Registrant's common shares, no par value, issued and outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the Registrant's Definitive Proxy Statement for the Registrant's Annual Meeting of Shareholders scheduled to be held on May 13, 2021 to be filed with the Securities and Exchange Commission are incorporated by reference in answers to Part III of this Annual Report on Form 10-K.

NOVANTA INC.
FORM 10-K
YEAR ENDED DECEMBER 31, 2020

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As used in this report, the terms “we,” “us,” “our,” “Novanta,” “NOVT” and the “Company” mean Novanta Inc. and its subsidiaries, unless the context indicates another meaning.

Unless otherwise noted, all dollar amounts in this report are expressed in United States dollars.

The following brand and trade names of the Company are used in this report: Cambridge Technology, Lincoln Laser, Synrad, Laser Quantum, ARGES, WOM, NDS, NDSsi, Med X Change, Reach Technology, JADAK, ThingMagic, Photo Research, General Scanning, Celera Motion, MicroE, Applimotion, Zettlex, Ingenia and Westwind.

PART I

Cautionary Note Regarding Forward Looking Statements

Except for historical information, the matters discussed in this Annual Report on Form 10-K are forward looking statements that involve risks, uncertainties and assumptions that, if they never materialize or if they prove incorrect, could cause our consolidated results to differ materially from those expressed or implied by such forward looking statements. The Company makes such forward looking statements under the provision of the “Safe Harbor” section of the Private Securities Litigation Reform Act of 1995. Actual future results may vary materially from those projected, anticipated, or indicated in any forward-looking statements as a result of various important factors, including those set forth in Item 1A of this Annual Report on Form 10-K under the heading “Risk Factors.” Readers should also carefully review the risk factors described in the other documents that we file with the Securities and Exchange Commission (“SEC”) from time to time. In this Annual Report on Form 10-K, the words “anticipates,” “believes,” “expects,” “intends,” “future,” “could,” “estimates,” “plans,” “would,” “should,” “potential,” “continues” and similar words or expressions (as well as other words or expressions referencing future events, conditions or circumstances) identify forward looking statements. Forward looking statements also include the assumptions underlying or relating to any of the forward-looking statements. The forward looking statements contained in this Annual Report include, but are not limited to, statements related to: the anticipated impacts of the COVID-19 pandemic on our business, financial results and financial condition; our belief that the Purchasing Managers Index (“PMI”) may provide an indication of the impact of general economic conditions on our sales into the advanced industrial end market; our strategy; anticipated financial performance; expected liquidity and capitalization; drivers of revenue growth and our growth expectations in various markets; management’s plans and objectives for future operations, expenditures and product development, and investments in research and development; business prospects; potential of future product releases and expansion of our product and service offerings; anticipated revenue performance; industry trends; market conditions; our competitive positions; changes in economic and political conditions; changes in accounting principles; changes in actual or assumed tax liabilities; expectations regarding tax exposures; anticipated reinvestment of future earnings and dividend policy; anticipated expenditures in regard to the Company’s benefit plans; future acquisitions, integration and anticipated benefits from acquisitions and dispositions; anticipated economic benefits and expected costs of restructuring programs; ability to repay our indebtedness; our intentions regarding the use of cash; expectations regarding legal and regulatory environmental requirements and our compliance thereto; and other statements that are not historical facts. All forward looking statements included in this document are based on information available to us on the date hereof. We will not undertake and specifically decline any obligation to update any forward-looking statements, except as required under applicable law.

Item 1. *Business*

Overview

Novanta Inc. and its subsidiaries (collectively referred to as the “Company”, “Novanta”, “we”, “us”, “our”) is a leading global supplier of core technology solutions that give medical and advanced industrial original equipment manufacturers (“OEMs”) a competitive advantage. We combine deep proprietary technology expertise and competencies in photonics, vision and precision motion with a proven ability to solve complex technical challenges. This enables us to engineer core components and sub-systems that deliver extreme precision and performance, tailored to our customers’ demanding applications.

The Company was founded and initially incorporated in Massachusetts in 1968 as General Scanning, Inc. (“General Scanning”). In 1999, General Scanning merged with Lumonics Inc. The post-merger entity, GSI Lumonics Inc., continued under the laws of the Province of New Brunswick, Canada. In 2005, the Company changed its name to GSI Group Inc. Through a series of strategic divestitures and acquisitions, the Company transformed from one that was more focused on the semiconductor industry to one that primarily sells components and sub-systems to OEMs in the medical and advanced industrial markets. The Company changed its name to Novanta Inc. in May 2016.

Strategy

Our strategy is to drive sustainable, profitable growth through short-term and long-term initiatives, including:

- disciplined focus on our diversified business model of providing components and sub-systems to long life-cycle OEM customer platforms in attractive medical and advanced industrial niche markets;
- improving our business mix to increase medical sales as a percentage of total revenue by:
 - introducing new products aimed at attractive medical applications, such as minimally invasive and robotic surgery, ophthalmology, patient monitoring, drug delivery, clinical laboratory testing and life science equipment;
 - deepening our key account management relationships with and driving cross selling of our product offerings to leading medical equipment manufacturers; and

- pursuing complementary medical technology acquisitions;
- increasing our penetration of high growth advanced industrial applications, such as laser materials processing, robotics, laser additive manufacturing, automation and metrology, by working closely with OEM customers to launch application specific products that closely match the requirements of each application;
- broadening our portfolio of enabling proprietary technologies and capabilities through increased investment in new product development, and investments in application development to further penetrate existing customers, while expanding the applicability of our solutions to new markets;
- broadening our product and service offerings through the acquisition of innovative and complementary technologies and solutions in medical and advanced industrial technology applications, including increasing our recurring revenue streams such as services, spare parts and consumables;
- expanding sales and marketing channels to reach new target customers;
- improving our existing operations to expand profit margins and improve customer satisfaction by implementing lean manufacturing principles, strategic sourcing across our major production sites, and optimizing and limiting the growth of our fixed cost base; and
- attracting, retaining, and developing world-class talented and motivated employees.

Recent Developments

Impact of COVID-19 on Our Business

Our Employees

In response to the COVID-19 pandemic, we have taken proactive, aggressive actions to protect the health and safety of our employees. We established steering committees at both the corporate level and at each of our facilities to provide leadership for and manage our COVID-19 risk mitigation actions and countermeasures. We have provided frequent employee communications that include guidance and updates to our employees with regards to COVID-19 safety procedures and status. We established rigorous safety measures in all of our facilities, including implementing social distancing protocols, requiring working from home for those employees that do not need to be physically present on the manufacturing floor or in our facilities to perform their work, suspending travel, spreading production over more shifts, implementing temperature checks at the entrances to our facilities, frequently disinfecting our workspaces, and providing masks to those employees who must be physically present in our facilities. We expect to continue these measures until we determine that the COVID-19 pandemic is adequately contained for purposes of our business. In connection with our COVID-19 remediation actions, we have incurred additional costs to protect the health of our employees, including investment in technologies and monitoring equipment. We expect such costs to continue to grow and be significant to our cost of operations. We may take further actions as government authorities require or recommend or as we determine to be in the best interest of our employees.

We are committed to retaining and supporting our employees during this pandemic. To retain our employees, we issued to all of our employees, other than the Chief Executive Officer, the Chief Financial Officer, the Chief Human Resources Officer and the Chief Accounting Officer, a special one-time restricted stock unit grant in April 2020 at a total fair value of \$14.4 million in the aggregate. The restricted stock units vested in February 2021. These actions were implemented to create an ownership mindset and focus among all employees for the duration of the COVID-19 pandemic and through the expected recovery, while maintaining the Company's talent and capabilities.

Executive Compensation

The Compensation Committee of our Board of Directors approved the 2020 compensation plans for our executive officers and a Section 16 officer (collectively, the "Officers") in February 2020. To support our business during the COVID-19 pandemic, the Officers agreed to a reduction in cash compensation. Further, the Officers did not receive the special one-time restricted stock unit grant issued to the rest of the employees. In June 2020, our Board of Directors agreed to forgo the cash retainers payable to our non-employee directors for the third quarter of 2020.

Our Customers

The outbreak has significantly increased economic and demand uncertainty. The spread of COVID-19 has caused a global economic slowdown and a global recession. In 2020, the decline in customer demand in both the medical and advanced industrial end markets resulted in a decrease in sales to many of our customers. In the event of a further prolonged economic recession, overall demand for our products could decline further in the near term and our business would be adversely affected to a greater extent.

Our Facilities

Because of the COVID-19 pandemic, governmental authorities worldwide implemented numerous evolving measures to try to contain the spread of the virus, such as travel bans and restrictions, limits on social gatherings, quarantines, shelter-in-place orders, business shutdowns and social distancing. We have important manufacturing operations in the U.S., the U.K., Germany, and China, all of which have been affected by the COVID-19 pandemic. As of December 31, 2020, our manufacturing facilities around the world were in operation. While governmental measures may be modified or extended in the event of a resurgence of COVID-19 infections, the spread of new variants of the virus, and delays in effective vaccination of a large proportion of the populations, we have taken measures to protect our employees and expect our manufacturing facilities to remain operational. In connection with the COVID-19 pandemic, we have experienced limited absenteeism from those employees who are required to be on site to perform their jobs.

Our Supply Chain

We have experienced limited disruption to our supply chain as a result of the COVID-19 pandemic to date. We regularly monitor the financial health and manufacturing output of companies in our supply chain. Hardship on our suppliers or sub-suppliers caused by the COVID-19 pandemic could cause further disruption in our ability to obtain raw materials or components required to manufacture our products, adversely affecting our operations. To mitigate the risk of any potential supply interruptions from the COVID-19 pandemic, we are identifying alternative suppliers, sourcing raw materials from different supplier locations, and taking other actions to ensure our supply of raw materials. Although we are mitigating potential supply interruptions from the COVID-19 pandemic, if certain suppliers cannot produce a key component for us, or if the receipt of certain materials is otherwise delayed, we may miss our scheduled shipment deadlines and our relationship with customers may be harmed. Additionally, restrictions on or disruptions of transportation, such as reduced availability of air transports, port closures and increased border controls or closures, have resulted in higher costs and delays, both for obtaining raw materials from suppliers and for shipping finished products to customers.

Our Liquidity

With respect to liquidity, we have taken actions to reduce costs and cash expenditures across the Company. These actions included reducing hiring activities, restricting travel, adjusting employee compensation by eliminating fiscal year 2020 cash bonuses and base salary increases, implementing an unpaid time-off program for substantially all of our non-production workforce, limiting discretionary spending, reducing or deferring spending on capital investment projects, deferring lease payments on certain facilities, and deferring certain U.S. payroll tax payments in accordance with relief provisions under the Coronavirus Aid, Relief, and Economic Security Act (the "CARES Act"). As of December 31, 2020, we deferred \$2.8 million in certain U.S. payroll tax payments under the CARES Act. Due to the uncertainty related to the future impact of the COVID-19 pandemic, we temporarily suspended repurchases under our share repurchase plans in April 2020.

As of December 31, 2020, we had cash and cash equivalents of \$125.1 million and available borrowing capacity under our revolving credit facility of \$395.2 million. We have reviewed numerous potential scenarios in connection with the impact of COVID-19 on our business. Based on our analysis, we believe our existing balances of cash and cash equivalents, anticipated cash flows from our operating activities, and available borrowing capacity under our revolving credit facility will be sufficient to meet our cash needs arising in the ordinary course of business for the next twelve months. Additionally, we believe we will remain in compliance with our debt covenants for the next twelve months.

Acquisitions

We continuously evaluate our business mix and financial performance. Since 2013, we have executed a series of acquisitions in line with our strategy. The following table summarizes significant acquisitions since 2013:

Company	Year of Acquisition	Total Purchase Price (in thousands)
ARGES GmbH	2019	\$ 73,151
Zettlex Holdings Limited	2018	\$ 32,026
Laser Quantum Limited (24%)(1)	2018	\$ 45,053
Laser Quantum Limited (35%)	2017	\$ 31,052
W.O.M. World of Medicine GmbH	2017	\$ 134,934
JADAK LLC	2014	\$ 94,796
NDS Surgical Imaging LLC	2013	\$ 75,355

(1) After the acquisition of the remaining (approximately 24%) noncontrolling interests of Laser Quantum Limited ("Laser Quantum") in September 2018, we owned 100% of the outstanding equity of Laser Quantum.

Segments

Our Chief Operating Decision Maker ("CODM") is our Chief Executive Officer. Our CODM utilizes financial information to make decisions about allocating resources and assessing performance for the entire Company. We evaluate the performance of, and allocate resources to, our segments based on revenue, gross profit and operating profit. Our reportable segments have been identified based on commonality and adjacency of technologies, applications, and customers amongst our individual product lines.

Based upon the information provided to the CODM, we have determined that we have three reportable segments. The following table shows the external revenues, gross profit margin and operating profit for each of the segments for the year ended December 31, 2020 (dollars in thousands):

	Revenue	Gross Profit Margin	Operating Profit
Photonics	\$ 199,613	44.6%	\$ 34,001
Vision	\$ 261,650	38.3%	\$ 16,354
Precision Motion	\$ 129,360	45.1%	\$ 31,663

See Note 18 to Consolidated Financial Statements for additional financial information about our reportable segments.

Photonics

The Photonics segment designs, manufactures and markets photonics-based solutions, including laser scanning, laser beam delivery, CO2 laser, solid state laser, ultrafast laser, and optical light engine products to customers worldwide. The segment serves highly demanding photonics-based applications for advanced industrial processes, metrology, medical and life science imaging, DNA sequencing, and medical laser procedures. The vast majority of the segment's product offerings are sold to OEM customers. The segment sells these products both directly, utilizing a highly technical sales force, and indirectly, through resellers and distributors.

The Photonics segment is comprised of four product lines:

Product Lines	Key End Markets	Brand Names	Description
<i>Laser Beam Delivery Components</i>	Advanced Industrial and Medical	Cambridge Technology	Galvanometer and polygon-based optical scanning components. These products provide precise control and delivery of laser beams through motorized manipulation of mirrors and optical elements and are integrated by OEM manufacturers with their controlling hardware and software. Advanced industrial applications include additive manufacturing, packaging converting, laser marking, micromachining and metrology. Medical applications include optical coherence tomography imaging, microscopy, and laser-based vision correction.
<i>Laser Beam Delivery Solutions</i>	Advanced Industrial and Medical	Cambridge Technology, Synrad, Laser Quantum, ARGES	Galvanometer and polygon based optical scan heads that provide precise control and delivery of laser beams through motorized manipulation of mirrors and optical elements in multi-axis scan heads, highly integrated scanning subsystems, and controlling hardware and software. Optical light engine products that integrate lasers into light engines with full beam parameter control. Advanced industrial applications include additive manufacturing, packaging converting, laser marking, micromachining and metrology. Medical applications include DNA sequencing, optical coherence tomography imaging, microscopy, super-resolution imaging, and laser-based vision correction.
<i>CO₂ Lasers</i>	Advanced Industrial	Synrad	Continuous and pulsed CO ₂ lasers with power ranges from 5 to 400 watts. Applications include coding, marking, engraving, cutting and trimming of non-metals, fine materials processing, additive manufacturing, packaging converting, and medical applications in dental and dermatology.
<i>Solid State and Ultrafast Lasers</i>	Medical and Advanced Industrial	Laser Quantum	Diode-pumped solid state lasers and ultrafast lasers in the visible to near-infrared. Applications include DNA sequencing, microscopy, and super-resolution imaging.

Vision

The Vision segment designs, manufactures and markets a range of medical grade technologies, including medical insufflators, pumps and related disposables; visualization solutions; wireless, recorder and video integration technologies for operating room integrations; optical data collection and machine vision technologies; radio frequency identification (“RFID”) technologies; thermal chart recorders; spectrometry technologies, and embedded touch screen solutions. The vast majority of the segment’s product offerings are sold to OEM customers. The segment sells these products both directly, utilizing a highly technical sales force, and indirectly, through resellers and distributors.

The Vision segment has nine product lines:

Product Lines	Key End Markets	Brand Names	Description
<i>Medical Insufflators, Pumps and Accessories</i>	Medical	WOM	Insufflators, pumps, light sources and video couplers, gamma probes and related accessories and consumables for minimally invasive surgery.
<i>Visualization Solutions</i>	Medical	NDS, NDSsi	High definition, 4K and 4K 3D visualization solutions for minimally invasive surgery and robotic surgery.
<i>Video Processing, Streaming and Capture</i>	Medical	NDS, NDSsi, Med X Change	Imaging management for visual information, including real-time distribution, documentation, control, recording, and streaming for multiple imaging modalities for surgical applications. High definition wireless transmission of video signals to replace video cables in minimally invasive surgical equipment.
<i>Touch Panel Displays</i>	Medical and Advanced Industrial	Reach Technology	Embedded capacitive and resistive touch panel technology that delivers high-performance solutions.
<i>Machine Vision</i>	Medical and Advanced Industrial	JADAK	Camera-based machine vision products and solutions performing image analysis within medical devices.
<i>RFID</i>	Medical and Advanced Industrial	JADAK, ThingMagic	RFID technologies via High-Frequency (HF) and Ultra-High Frequency (UHF) readers, writers and antennas for applications such as surgical part tracking and counterfeit detection.
<i>Barcode Identification</i>	Medical and Advanced Industrial	JADAK	Embedded and handheld data collection products for barcode identification.
<i>Thermal Chart Recorders</i>	Medical	JADAK	Rugged thermal chart recorders for patient monitoring, defibrillator equipment, blood gas analyzers, and pulse oximeters.
<i>Light and Color Measurement</i>	Medical and Advanced Industrial	Photo Research	Light and color measurement devices, including spectroradiometers, photometers, and color characterization software, used in research and development and quality control testing.

Precision Motion

The Precision Motion segment designs, manufactures and markets optical and inductive encoders, precision motor and motion control sub-assemblies, servo drives, air bearings, and air bearing spindles to customers worldwide. The vast majority of the segment’s product offerings are sold to OEM customers. The segment sells these products both directly, utilizing a highly technical sales force, and indirectly, through resellers and distributors.

The Precision Motion segment includes six product lines:

Product Lines	Key End Markets	Brand Names	Description
<i>Optical Encoders</i>	Advanced Industrial and Medical	Celera Motion, MicroE	Optical encoders for precision motion control and sensing in semiconductor and electronics manufacturing, industrial and medical robotics, metrology, satellite communications, medical devices, and laboratory and diagnostics equipment.
<i>Inductive Encoders</i>	Advanced Industrial and Medical	Celera Motion, Zettlex	Inductive encoders for precision motion control and sensing in satellite communications, surveillance, medical devices, industrial and medical robotics, autonomous vehicles, and laboratory and diagnostics equipment.
<i>Precision Motors</i>	Advanced Industrial and Medical	Celera Motion, Applimotion	Direct drive motor components for precision motion control in semiconductor and electronics manufacturing, industrial and medical robotics, autonomous vehicles, metrology, satellite communications, surveillance, medical devices, and laboratory and diagnostics equipment.
<i>Servo drives and motion control solutions</i>	Advanced Industrial and Medical	Celera Motion, Ingenia	Precision motion servo drives and control software used in industrial robotics, medical robotics, autonomous vehicles, satellite communications, and medical devices.
<i>Integrated Motion Control Solutions</i>	Advanced Industrial and Medical	Celera Motion	Integrated motion sub-assemblies. Applications include precision motion control in semiconductor and electronics manufacturing, industrial and medical robotics, autonomous vehicles, metrology, satellite communications, surveillance, medical devices, and laboratory and diagnostics equipment.
<i>Air Bearing Spindles</i>	Advanced Industrial	Celera Motion, Westwind	High-speed and precision air bearings and air bearing spindles. Applications include printed circuit board ("PCB") manufacturing, automotive coating, semiconductor manufacturing equipment, micro machining, and power generation.

End Markets

We primarily operate in two end markets: the medical market and the advanced industrial market.

Medical Market

For the year ended December 31, 2020, the medical market accounted for approximately 56% of the Company's revenue. Revenue from our products sold to the medical market is generally affected by hospital and other healthcare provider capital spending, growth rates of surgical procedures, changes in regulatory requirements and laws, aggregation of purchasing by healthcare networks, changes in technology requirements, timing of OEM customers' product development and new product launches, changes in customer or patient preferences, and general demographic trends. Approximately 70% of our medical end market sales are related to surgical procedures, both elective and emergency based.

Advanced Industrial Market

For the year ended December 31, 2020, the advanced industrial market accounted for approximately 44% of the Company's revenue. Revenue from our products sold to the advanced industrial market is affected by a number of factors, including changing technology requirements and preferences of our customers, productivity or quality investments in a manufacturing environment, the financial condition of our customers, changes in regulatory requirements and laws, and general economic conditions. We believe that the Purchasing Managers Index (PMI) on manufacturing activities specific to different regions around the world may provide an indication of the impact of general economic conditions on our sales into the advanced industrial market.

Working Capital Requirements

There are no special inventory stocking requirements or credit terms extended to customers that would have a material adverse effect on our working capital.

Customers

We have a diverse group of customers that include companies that are global leaders in their industries. Many of our customers participate in several market industries. For the year ended December 31, 2020, the Company recognized revenue from an OEM customer in the medical end market which accounted for approximately 11% of our consolidated revenue. No customer accounted for greater than 10% of our consolidated revenue during the years ended December 31, 2019 or 2018.

Our customers include a large number of OEMs who integrate our products into their systems for sale to end users. We also sell a very small portion of our products directly to end users. Our customers include leaders in the medical and advanced industrial markets. A typical OEM customer will usually evaluate our products and our ability to provide application knowledge and expertise, post-sales application support and services, supply chain management over long durations, manufacturing capabilities, product quality, global presence, and product customization before deciding to incorporate our products into their products or systems. Customers generally choose suppliers based on a number of factors, including product performance, reliability, application support, price, breadth of the supplier's product offerings, the financial condition of the supplier, and the geographical coverage offered by the supplier. Once certain of our products have been designed into a given OEM customer's product or system, there are generally significant barriers to subsequent supplier changes until the end of the product or system life cycle, especially in the medical market.

Seasonality

While our revenues are not highly seasonal on a consolidated basis, the revenues of some of our individual product lines are impacted in the first quarter by the lower seasonal spending patterns of our customers due to their annual capital budgeting cycles.

Backlog

As of December 31, 2020 and 2019, our consolidated backlog was approximately \$239.6 million and \$243.1 million, respectively. The majority of orders included in backlog represent open orders for products and services that, based on management's projections, have a reasonable probability of being delivered over the subsequent twelve months. Orders included in backlog may be canceled or rescheduled by customers without significant penalty. Management believes that backlog is not a meaningful indicator of future business prospects for any of our business segments due to the short lead time required on our products and the ability of customers to reschedule or cancel orders. Therefore, backlog as of any particular date should not be relied upon as indicative of our revenues for any future period.

Manufacturing

Manufacturing functions are performed internally either when we choose to maintain control over critical portions of the production process, or for cost related reasons, while other portions of the manufacture of our products are outsourced to highly qualified third parties.

Products offered by our Photonics segment are manufactured at facilities in Bedford, Massachusetts; Mukilteo, Washington; Phoenix, Arizona; Wackersdorf, Germany; Taunton and Manchester, United Kingdom; and Suzhou, China. Products offered by our Vision segment are manufactured at facilities in Syracuse and Rochester, New York; Bradenton, Florida; and Ludwigsstadt, Germany. Products offered by our Precision Motion segment are primarily manufactured at facilities in Bedford, Massachusetts; Rocklin, California; Poole and Cambridge, United Kingdom; and Suzhou, China.

Many of our products are produced in manufacturing facilities certified under ISO 9001 certification, while the majority of our products manufactured for the medical market are produced in factories under ISO 13485 certification. The manufacturing facilities

for our medical insufflators, pumps, cameras and accessories products are ISO 14001 certified. Certain visualization solutions, thermal chart recorders, imaging informatics and medical insufflators, pumps, cameras and accessories products are manufactured under current good manufacturing practices (cGMPs), which is a requirement of their medical device classification by the United States Food and Drug Administration (the “FDA”).

Marketing, Sales and Distribution

We sell our products globally, primarily through our direct sales force. Sales outside of the United States are largely based on a direct sales force, but occasionally are sold through distributors, including manufacturers’ representatives, to either augment our selling effort or serve a local market where we have no direct sales force. Our local sales, applications, and service teams and our distributors work closely with our customers to ensure customer satisfaction with our products. We have sales and service centers located in the United States, Europe and Asia.

To support our sales efforts, we maintain and continue to invest in a number of application centers around the world, where our application experts work closely with customers on integrating and using our solutions in their equipment. We currently maintain service and application centers in the United States, Europe and Asia.

Competition

The markets in which we compete are dynamic and highly competitive. While no single company competes with us across the breadth of our product offerings, we face a fragmented competitive landscape, with competitors in particular product categories and individual application areas. Our competitors range from large foreign and domestic organizations, which produce a comprehensive array of goods and services and may have greater financial and other resources than we do, to small private firms, which produce a limited number of goods or services for specialized market segments.

Competitors for our products are fragmented by particular product categories, and the individual markets in which we operate are highly competitive. Our major competitors by reportable segments include, among others:

Photonics: SCANLAB, Coherent, and a few smaller competitors.

Vision: Barco, Omron Microscan Systems, and a few smaller competitors.

Precision Motion: Renishaw, HEIDENHAIN, Physik Instrument, and a few smaller competitors.

Competitive factors in our Photonics, Vision, and Precision Motion segments include product performance, price, quality and reliability, features, compatibility of products with existing systems, technical support, product breadth, market presence and our overall reputation. We believe that our products offer a number of competitive advantages, and the breadth of technologies we offer gives us deep market application knowledge to better serve our customers’ needs and distinguishes us from our competitors. Ultimately, any inability to deliver high-quality products timely when the customer needs them presents the biggest threat to our competitiveness.

Raw Materials, Components and Supplies

Each of our businesses uses a wide variety of raw materials, key components and parts that are generally available from alternative sources of supply and in adequate quantities from domestic and foreign sources. In some instances, we design and/or re-engineer the parts and components used in our products. For certain critical raw materials, key components and parts used in the production of some of our principal products, we have identified only a limited number of suppliers or, in some instances, a single source of supply. We also rely on a limited number of suppliers to manufacture subassemblies for some of our products.

For a further discussion of the importance and risks associated with our supply chain, see applicable risk factors under Item 1A of this Annual Report on Form 10-K.

Patents and Intellectual Property

We rely upon a combination of copyrights, patents, trademarks, trade secret laws and restrictions on disclosure to protect our intellectual property rights. We hold a number of registered and pending patents in the United States and other countries. In addition, we also have trademarks registered in the United States and other countries. We will continue to actively pursue applications for new patents and trademarks as we deem appropriate. However, there can be no assurance that any other patents will be issued to us or that such patents, if and when issued, will provide any protection or benefit to us.

Although we believe that our patents and pending patent applications are important, we rely upon several additional factors that are essential to our business success, including: market position, technological innovation, know-how, application knowledge and product performance. However, there can be no assurance that we will be able to sustain these advantages. Considering the diversified nature of our businesses, we do not believe that any individual patent is material to our business as a whole.

We also protect our proprietary rights by controlling access to our proprietary information and by maintaining confidentiality agreements with our employees, consultants, and certain customers and suppliers. For a further discussion of the importance of risks associated with our intellectual property rights, see applicable risk factors under Item 1A of this Annual Report on Form 10-K.

Human Capital

We believe that our employees are our most important asset. The Chief Human Resources Officer ("CHRO") is responsible for developing and executing our human capital strategy. This includes the acquisition, development, and retention of talent to deliver on our strategy as well as the design of employee compensation and benefits and diversity, equity and inclusion programs. The CHRO and the Chief Executive Officer ("CEO") regularly update our board of directors on the operation and status of these human capital activities; including, but not limited to, Novanta's talent development, diversity, equity and inclusion, and succession planning programs. As of December 31, 2020, we employed approximately 2,200 people, of which approximately 37% were in the United States, 51% in Europe, and 12% in Asia. We win with our customers by delivering new technology innovations through our highly technical Research & Development ("R&D") team of approximately 420 employees.

We believe that our employees should have a meaningful role helping us develop our culture. We utilize survey feedback mechanisms for employee engagement and organizational health to measure our current situation and gain insight into areas where we can improve. We have conducted surveys of our entire employee population in 2018 and 2020 and we compare our employee engagement and organizational health scores against benchmark populations with our survey vendors. We have achieved employee participation levels of nearly 90% of our active employees and have developed specific action plans across the Company as a result of their feedback. We are executing on our action plans with the expectation to improve our overall organization health and employee engagement.

All employees are responsible for upholding the Novanta Code of Ethics and Business Conduct, which is important in delivering on our strategy. We maintain a compliance hotline for the confidential reporting of any suspected policy violations or unethical business conduct on the part of our businesses, employees, officers, directors, or suppliers and provide training and education to our global workforce with respect to our Novanta Code of Ethics and Business Conduct, anti-corruption and anti-bribery policies, data privacy regulations and workplace harassment.

Diversity and inclusion

The Novanta Way defines the fabric of our culture and how we work together, and it starts with building cohesive teams. Our teams must be diverse and inclusive, based on trust, commitment, and accountability. Our diversity is reflected in governance, leadership, influence, and technical expertise at all levels in the organization. We do not tolerate discrimination and harassment. We expect our teams to respect our core values and to conduct themselves ethically at all times in accordance with the Novanta Code of Ethics and Business Conduct.

As of December 31, 2020, our board of directors was 75% comprised of men and 25% comprised of women, which was a doubling of women representation on our board of directors from 2019. In addition, in December 2020, our board of directors elected a new director as of February 2021, which will result in 33% of our board of directors coming from underrepresented communities.

As of December 31, 2020, our gender diversification efforts resulted in 35% of our workforce being women, and the proportion of women in management positions amounted to 25%. During 2020, in line with our strategic initiative of increasing representation of employees from underrepresented communities, we launched a series of diversity, equity and inclusion initiatives to make stronger progress on our goals by the year 2023.

Compensation and Benefits

We strive to provide market competitive compensation, benefits and services that help meet the varying needs of our employees. In addition to salaries and wages, these programs, which vary by country, can include annual bonuses, sales commissions, stock-based compensation awards, defined contribution retirement savings plans with company matching contributions, healthcare and insurance benefits, flexible spending accounts, health savings account with company matching contributions, unlimited paid time off, paid family leave, and tuition assistance. Certain U.S. facilities have a dedicated medical professional on site to provide basic healthcare

services to employees, provide general first aid, assess employee health risks and promote employee health. Our bonus and commission payment programs allow for higher payouts when goals are exceeded and lower payouts when goals are not met.

In response to the COVID-19 pandemic, we recognized the importance of retaining and supporting our employees. To further that end, we issued to all of our employees, other than the Chief Executive Officer, the Chief Financial Officer, the Chief Human Resources Officer and the Chief Accounting Officer, a special one-time restricted stock unit grant in April 2020 at a total fair value of \$14.4 million in the aggregate. The restricted stock units vested in February 2021. This action was implemented to create an ownership mindset, increase retention, and to provide some certainty and employee engagement in uncertain times. We wanted to create an urgency and focus among all employees to do what was necessary to ensure the Company's financial health for the duration of the pandemic and through the expected recovery, while preserving our differentiated talent and capabilities throughout the Company.

Growth and Development

We invest significant resources to develop the talent needed to remain at the forefront of innovation and make Novanta an employer of choice. In certain countries, we offer college tuition reimbursement for eligible employees for undergraduate and graduate studies. In 2019, we founded Novanta University as a primary instrument of company-wide learning management. A full-time specialist and the Company's human resources department coordinate the onboarding of new employees and the regular training of the entire workforce. Internal and external courses are available for this purpose. In addition to Novanta University, we utilize our Novanta Growth System, which provides processes, tools, and trainings with a focus on continuous improvement.

Safety and Wellbeing of Our Employees

We provide mandatory safety trainings in our production facilities, which are designed to focus on empowering our employees with the knowledge and tools they need to make safe choices and to mitigate risks.

In response to the COVID-19 pandemic, we have taken proactive, mandatory actions to protect the health and safety of our employees. We established steering committees at both the Company level and at each of our facilities to provide leadership for and to manage our COVID-19 risk mitigation actions and countermeasures consistently across our locations worldwide. We have provided frequent employee communications that include guidance and updates to our employees with regards to COVID-19 safety procedures and status. We established rigorous safety measures in all of our facilities, including implementing social distancing protocols, requiring working from home for those employees that do not need to be physically present on the manufacturing floor or in our facilities to perform their work, suspending travel, spreading production over more shifts, implementing health checks at the entrances to our facilities, frequently disinfecting our workspaces, and providing masks to those employees who need to be physically present in our facilities. Many of these actions were at a significant cost to the Company and we expect to continue these measures until we determine that the COVID-19 pandemic is adequately contained and the safety of our employees is reasonably assured.

Cybersecurity

We have adopted and are implementing the National Institute of Standards and Technology (NIST) Cybersecurity Framework (CSF). The NIST CSF integrates industry standards and best practices to help organizations manage their cybersecurity risks. The NIST CSF helps organizations understand their cybersecurity risks (threats, vulnerabilities and impacts) and how to reduce these risks with customized measures, such as organization-wide cybersecurity awareness training.

The Company's Audit Committee is responsible for the oversight of cybersecurity risks. The Audit Committee reviews quarterly with management and internal audit the Company's cybersecurity program and related matters.

There have been no material information security breaches for the years ended December 31, 2020, 2019, and 2018, respectively. Net expenses incurred in connection with information security breaches have been immaterial for the years ended December 31, 2020, 2019, and 2018, respectively.

Government Regulation

Our current and contemplated activities and the products and processes that will result from such activities are subject to substantial government regulations, both in the United States and internationally. Such rules and regulations are subject to change by the governing agencies and we monitor those changes closely.

Environmental Regulations

Most of our production facilities are subject to various federal, state, local, and/or foreign environmental regulations related to the use, storage, handling, and disposal of regulated materials, chemicals, and certain waste products.

We may face increasing complexity in our product designs and procurement operations due to the evolving nature of product compliance standards. Those standards may impact the material composition of our products entering specific markets. Such regulations went into effect in the European Union ("EU") in 2006 ("The Restriction of Hazardous Substances Directive" ("RoHS")) and in 2007 ("Registration, Evaluation, Authorisation and Restriction of Chemicals" ("REACH")), and in China in 2007 ("Management Methods for Controlling Pollution Caused by Electronic Information Products Regulation" ("China-RoHS")).

Our capital expenditures, earnings, and competitive position have not been, and are not expected to be, materially affected by our compliance with federal, state, and local environmental provisions that have been enacted or adopted to regulate the distribution of materials into the environment.

Medical Device Regulations

Certain products manufactured by us are integrated into systems by our customers that are subject to regulation by the Federal Food and Drug Administration ("the FDA"). We must comply with certain quality control measurements in order for our products to be effectively used in our customers' end products. Non-compliance with quality control measurements could result in fines, penalties, and loss of business with our customers.

We are also subject to certain medical device regulations. Medical devices are subject to extensive and rigorous regulation by the FDA and other federal, state and local authorities. The Federal Food, Drug and Cosmetic Act (the "FDCA") and related regulations govern the conditions of safety, efficacy, clearance, approval, manufacturing, quality system requirements, labeling, packaging, distribution, storage, recordkeeping, reporting, marketing, advertising, and promotion of products.

FDA Premarket Clearance and Approval Requirements

Unless an exemption applies, each medical device commercially distributed in the United States requires either FDA clearance of a 510(k) premarket notification or approval of a premarket approval application ("PMA"). Under the FDCA, medical devices are classified into one of three classes—Class I, Class II or Class III—depending on the degree of risk associated with each medical device and the extent of manufacturer and regulatory control needed to ensure its safety and effectiveness. Class I includes devices with the lowest risk to the patient and are those for which safety and effectiveness can be assured by adherence to the FDA's General Controls for medical devices, which include compliance with the applicable portions of the Quality System Regulation (the "QSR"), facility registration and product listing, reporting of adverse medical events, and truthful and non-misleading labeling, advertising, and promotional materials. Class II devices are subject to the FDA's General Controls and special controls as deemed necessary by the FDA to ensure the safety and effectiveness of the device. These special controls can include performance standards, postmarket surveillance, patient registries and FDA guidance documents. While most Class I devices are exempt from the 510(k) premarket notification requirement, manufacturers of most Class II devices are required to submit to the FDA a premarket notification under Section 510(k) of the FDCA, requesting permission to commercially distribute the device. The FDA's permission to commercially distribute a device subject to a 510(k) premarket notification is generally known as 510(k) clearance. Devices deemed by the FDA to pose the greatest risks, such as life-sustaining, life-supporting or some implantable devices, or devices that have a new intended use, or use advanced technology that is not substantially equivalent to that of a legally marketed device are placed in Class III, requiring approval of a PMA. Some pre-amendment devices are unclassified, but are subject to the FDA's premarket notification and clearance process in order to be commercially distributed. In many cases, our customers are responsible for compliance with the FDA's requirements applicable to medical devices. However, we also currently market certain Class II medical device products independently that are subject to these requirements.

510(k) Marketing Clearance Pathway

To obtain 510(k) clearance, we must submit to the FDA a premarket notification submission demonstrating that the proposed device is "substantially equivalent" to a predicate device already on the market. A predicate device is a legally marketed device that is not subject to premarket approval, i.e., a device that was legally marketed prior to May 28, 1976 (pre-amendments device) and for which a PMA is not required, a device that has been reclassified from Class III to Class II or Class I, or a device that was found substantially equivalent through the 510(k) process. The FDA's 510(k) clearance process usually takes from nine to twelve months, but may take significantly longer. The FDA may require additional information, including clinical data, to make a determination regarding substantial equivalence.

If the FDA agrees that the device is substantially equivalent to a predicate device currently on the market, it will grant 510(k) clearance to commercially market the device. If the FDA determines that the device is “not substantially equivalent” to a previously cleared device, the device is automatically designated as a Class III device. The device sponsor must then fulfill more rigorous PMA requirements, or can request a risk-based classification determination for the device in accordance with the “de novo” process, which is a route to market for novel medical devices that are low to moderate risk and are not substantially equivalent to a predicate device.

After a device receives 510(k) marketing clearance, any modification that could significantly affect its safety or effectiveness, or that would constitute a major change or modification in its intended use, will require a new 510(k) marketing clearance or, depending on the modification, a de novo classification or PMA approval. The FDA requires each manufacturer to determine whether the proposed change requires submission of a 510(k) or a PMA in the first instance, but the FDA can review any such decision and disagree with a manufacturer’s determination. Many minor modifications are accomplished by a letter-to-file in which the manufacturer documents the change in an internal letter-to-file. The letter-to-file is prepared by the manufacturer in lieu of submitting a new 510(k) to obtain clearance for every change. The FDA can always review these letters-to-file in an inspection. If the FDA disagrees with a manufacturer’s determination, the FDA can require the manufacturer to cease marketing and/or request the recall of the modified device until 510(k) marketing clearance or PMA approval is obtained. In these circumstances, we may also be subject to significant regulatory fines or penalties.

Post-market Regulations

After a device is cleared or approved for marketing, numerous and pervasive regulatory requirements continue to apply. These include:

- establishment registration and device listing with the FDA;
- QSR requirements, which require manufacturers, including third-party manufacturers, to follow stringent design, testing, control, documentation and other quality assurance procedures during all aspects of the design and manufacturing process;
- labeling and marketing regulations, which require that promotion is truthful, not misleading and fairly balanced, provides adequate directions for use and that all claims are substantiated, and also prohibit the promotion of products for unapproved or “off-label” uses and impose other restrictions on labeling;
- FDA guidance on off-label dissemination of information and responding to unsolicited requests for information;
- clearance or approval of product modifications to 510(k)-cleared devices that could significantly affect safety or effectiveness or that would constitute a major change in intended use of one of the cleared devices;
- medical device reporting regulations, which require that a manufacturer report to the FDA if a device that it markets may have caused or contributed to a death or serious injury, or has malfunctioned and the device or a similar device that it markets would be likely to cause or contribute to a death or serious injury, if the malfunction were to recur;
- correction, removal and recall reporting regulations, which require that manufacturers report to the FDA field corrections and product recalls or removals if undertaken to reduce a risk to health posed by the device or to remedy a violation of the FDCA that may present a risk to health;
- requirements governing Unique Device Identifiers on devices and also requiring the submission of certain information about each device to the FDA’s Global Unique Device Identification Database;
- the FDA’s recall authority, whereby the agency can order device manufacturers to recall from the market a product that is in violation of governing laws and regulations; and
- post-market surveillance activities and regulations, which apply when deemed by the FDA to be necessary to protect the public health or to provide additional safety and effectiveness data on the device.

We may be subject to similar foreign laws that may include applicable post-marketing requirements such as safety surveillance. Our manufacturing processes are required to comply with the applicable portions of the QSR, which cover the methods and the facilities and controls for the design, manufacture, testing, production, processes, controls, quality assurance, labeling, packaging, distribution, installation and servicing of finished devices intended for human use. The QSR also requires, among other things, maintenance of a device master file, device history file, and a complaints file. As a manufacturer, we are subject to periodic scheduled or unscheduled inspections by the FDA. Our failure to maintain compliance with the QSR requirements could result in the shut-down of, or restrictions on, our manufacturing operations and the recall or seizure of our products, which would have a material adverse effect on our business. The discovery of previously unknown problems with any of our products, including unanticipated adverse events or adverse events of increasing severity or frequency, whether resulting from the use of the device within the scope of its clearance or off-label by a physician in the practice of medicine, could result in restrictions on the device, including the removal of the product from the market or voluntary or mandatory device recalls.

The FDA has broad regulatory compliance and enforcement powers. If the FDA determines that we failed to comply with applicable regulatory requirements, it can take a variety of compliance or enforcement actions, which may result in any of the following sanctions:

- warning letters, untitled letters, fines, injunctions, consent decrees and civil penalties;
- recalls, withdrawals, or administrative detention or seizure of our products;
- operating restrictions or partial suspension or total shutdown of production;
- refusing or delaying requests for 510(k) marketing clearance or PMA approvals of new products or modified products;
- withdrawing 510(k) clearances or PMA approvals that have already been granted;
- refusal to grant export or import approvals for our products; or
- criminal prosecution.

Other Healthcare Laws and Regulations

In the United States and other jurisdictions where we operate our business, there are healthcare laws and regulations that constrain our business operations, including our sales, marketing and promotional activities, and that limit the kinds of arrangements we may have with customers, physicians, healthcare entities and others in a position to purchase or recommend our products or other products or services we may develop and commercialize. These laws include, without limitation: the federal Anti-Kickback Statute, which prohibits, among other things, persons and entities from knowingly and willfully soliciting, receiving, offering or paying remuneration to induce, or in return for, either the referral of an individual or the purchase or recommendation of an item or service for which payment may be made under any federal healthcare program; federal civil and criminal false claims laws and civil monetary penalty laws, which prohibit, among other things, individuals or entities from knowingly presenting, or causing to be presented, claims for payment to the federal government, including federal healthcare programs, that are false or fraudulent; the federal Health Insurance Portability and Accountability Act of 1996 ("HIPAA") which created additional federal criminal statutes that prohibit, among other things, executing a scheme to defraud any healthcare benefit program and making false statements relating to healthcare matters; HIPAA, as amended by the Health Information Technology for Economic and Clinical Health Act of 2009 ("HITECH"), and their implementing regulations, which imposes certain requirements on certain types of individuals and entities relating to the privacy, security and transmission of individually identifiable health information; the federal Physician Payments Sunshine Act, which requires certain manufacturers of drugs, devices, biologics and medical supplies for which payment is available under Medicare, Medicaid or the Children's Health Insurance Program to annually report to the federal government information related to payments or other transfers of value made to physicians and teaching hospitals, as well as ownership and investment interests held by physicians and their immediate family members; and state and foreign law equivalents of each of the above federal laws, which differ from each other in significant ways and may not have the same effect, thus complicating compliance efforts. Violations of these laws may result in substantial civil penalties, including treble damages, and criminal penalties, including imprisonment, fines, the curtailment or restructuring of our operations, and exclusion from participation in governmental healthcare programs. For further information regarding other healthcare laws and regulations that our operations are subject to, see "Item 1A. Risk Factors—Risks Relating to our Business—Our business is indirectly subject to healthcare industry cost containment and healthcare reform measures that could result in reduced sales of our products."

Other Information

We maintain a website with the address <https://www.novanta.com>. We are not including the information contained on our website as part of, or incorporating it by reference into, this Annual Report on Form 10-K. We make available, free of charge through our website (<https://investors.novanta.com>), our annual reports on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K, proxy and information statements, and amendments to these reports as soon as reasonably practicable after we electronically file these materials with, or otherwise furnish them to, the Securities and Exchange Commission ("SEC"). In addition, our reports and other information are filed with securities commissions or other similar authorities in Canada and are available over the Internet at <https://www.sedar.com>.

Item 1A. Risk Factors

The following risk factors could have a material adverse effect on our business, financial position, results of operations and cash flows and could cause the market value of our common shares to fluctuate or decline. These risk factors may not include all of the important factors that could affect our business or that could cause our future financial results to differ materially from historical or expected results or cause the market price of our common shares to fluctuate or decline.

Risks Relating to Our Business

Our results of operations could be adversely affected by economic and political conditions and the effects of these conditions on our customers' businesses and levels of business activities.

A large portion of our product sales are dependent on our customers' need for increased capacity, productivity and cost saving initiatives, improved product quality and performance, and new investments. Weaknesses in our end markets could negatively impact our revenue and gross margin and consequently have a material adverse effect on our business, financial condition and results of operations. A severe and/or prolonged overall economic downturn or a negative or uncertain political climate could lead to weaknesses in our end markets and adversely affect our customers' financial condition and the timing or levels of business activity of our customers and the industries we serve. In particular, diminished growth expectations, economic and political uncertainty in regions across the globe and effects of the COVID-19 pandemic have adversely impacted our customers' financial condition and ability to maintain product order levels and reduced the demand for our products in 2020. Continued or worsening conditions could further reduce the demand for our products or depress pricing for our products and have a material adverse effect on our results of operations. Changes in global economic conditions could also shift demand for products or services for which we do not have competitive advantages. This could negatively affect the amount of business that we are able to obtain. In addition, if we are unable to successfully anticipate changes in economic and political conditions, we may be unable to effectively plan for and respond to those changes, and our business could be negatively affected.

The COVID-19 pandemic has adversely impacted and is expected to further adversely impact our business and results of operations.

In 2020, a strain of novel coronavirus disease, COVID-19, was declared a pandemic and spread across the world. The outbreak and government measures taken in response have had a significant adverse impact, both direct and indirect, on our businesses and the economy. We have experienced weakened demand from certain customers in the advanced industrial and medical end-markets, which has adversely affected and is expected to continue to adversely affect our revenues. For example, healthcare providers have deferred elective medical procedures in order to focus on combatting the pandemic, which has significantly reduced demand for certain of our medical products. Certain other customers have delayed their research and development programs, which has negatively affected the demand for some of our products. If these trends continue, our revenues will continue to be negatively impacted.

We also faced difficulty sourcing some materials and components necessary to fulfill production requirements and meeting scheduled shipments due to shipping and transportation disruptions. If these disruptions were to continue or worsen, our ability to manufacture our products or meet our customers' schedules may be adversely affected and our business would be harmed. Even if we are able to find alternate sources of supply for such materials or components, they may cost more or be of lower quality, which could affect our profitability, financial condition and business.

While the impact of the pandemic on our manufacturing capabilities and research and development activities has been limited to date, there can be no assurance that our ability to manufacture our products and to develop new products and technologies will not be disrupted in the future, due to sickness of employees, mandatory stay-at-home orders, travel restrictions, social distancing practices, supply interruptions or other potential disruptions. We have also faced, and may face in the future, limitations on our employee resources as a result of various causes, including stay-at-home orders from local governments, sickness of employees or their families, or the desire of employees to avoid contact with large groups of people. The pandemic has also diverted management resources and the prolonged work-from-home arrangements have increased business continuity and cybersecurity risks.

The COVID-19 pandemic continues to evolve. The extent to which the outbreak impacts our business, liquidity and financial results will depend on future developments, which are highly uncertain and cannot be predicted with confidence, such as the continued geographic spread of the disease, the duration of the pandemic, the location, duration and magnitude of future waves of infection, new mutations of the virus, delays in vaccine rollout, the effectiveness of vaccines against the virus and its mutations, travel restrictions and social distancing in the United States, the European Union, China and other countries, the duration and extent of business closures or business disruptions and the effectiveness of actions taken to contain and treat the disease. If we or our customers experience prolonged shutdowns or other business disruptions in the future, our ability to conduct our business in the manner and within planned timelines could be materially adversely impacted, and our business and financial results may continue to be adversely affected.

Additionally, concerns over the economic impact of the COVID-19 pandemic have caused extreme volatility in financial and other capital markets. There is no assurance that future resurgence of COVID-19 infections and further economic downturns will not cause volatilities in the capital markets, which may adversely impact our stock price and our ability to access capital markets, such as what occurred in March and April 2020.

Our business depends significantly upon our customers' capital expenditures, which are subject to cyclical market fluctuations.

Certain sub-segments of the advanced industrial market that we serve, including the microelectronics and industrial capital equipment markets, are cyclical and have historically experienced periods of oversupply, resulting in downturns in demand for capital equipment in which many of our products are used. It is difficult to predict the timing, length and severity of these downturns and their impact on our business. Further, our order levels or results of operations for a given period may not be indicative of order levels or results of operations for subsequent periods. For the foreseeable future, our operations will continue to depend upon industries that are subject to market cycles which, in turn, could adversely affect the market demand for our products.

We have experienced significant cyclical end market fluctuations in the past. For example, in 2019 and 2020, our sales into the advanced industrial end market declined as a result of a widespread downturn in this end market that is continuing. We cannot predict when slowdowns will recur or that the impact of such slowdowns will be more or less significant compared to historical fluctuations.

Our business success depends upon our ability to respond to fluctuations in product demand, but doing so may require us to incur costs despite limited visibility into future business declines.

During a period of increasing demand and rapid growth, we must be able to increase manufacturing capacity quickly. Our inability to quickly increase production in response to a surge in demand could prompt customers to look for alternative sources of supply or leave our customers without a supply, both of which events could harm our reputation and make it difficult for us to retain our existing customers or to obtain new customers and have a material adverse effect on our business.

In periods of weak demand, such as the recent environment, we have been, and may in the future be, required to reduce costs while maintaining the ability to motivate and retain key employees at the same time. Additionally, to remain competitive, we must continually invest in research and development, which may inhibit our ability to reduce costs in a down cycle. Long product lead-times create a risk that we may purchase inventories or manufacture products that we are unable to sell.

The success of our business depends on our ability to continuously innovate and to manage transitions to new product innovations.

Technology requirements in our markets are constantly changing. We must continually introduce new products that meet evolving customer needs. Our ability to grow depends on the successful development, introduction and market acceptance of new or enhanced products that address our customers' requirements. Developing new technology is a complex and uncertain process requiring us to accurately anticipate technological and market trends and meet those trends with the right products. Additionally, this requires that we manage the transition from older products to minimize disruption in customer ordering patterns, avoid excess inventory and ensure adequate supplies of new products. Failure to develop new products, failed market acceptance of new products or problems associated with new product transitions could harm our business.

We cannot predict how the market will react to new products introduced by us or to enhancements made to our existing products. If any of our new or enhanced products contain defects or perceived defects or have reliability, quality or compatibility problems or perceived problems, or if our competitors release similar products or enhancements at the same time that are more widely accepted by our customers, our revenue and results of operations for one or more reporting periods could be adversely affected.

If we fail to introduce new products in a timely manner, we may lose market share and be unable to achieve revenue growth targets.

Our research and development efforts may not lead to the successful introduction of products within the time frame that our customers demand. Our competitors may introduce new or improved products, processes or technologies that make our current or proposed products obsolete or less competitive. We may encounter delays or problems in connection with our research and development efforts. Product development delays may result from numerous factors, including:

- changing product specifications and customer requirements;
- unanticipated engineering complexities;
- changing market or competitive product requirements;
- difficulties in reallocating engineering resources and overcoming resource limitations; and
- inability to manufacture new products cost effectively.

New products often take longer to develop, may have fewer features than originally considered desirable, and may have higher costs than initially estimated. There may be difficulty in sourcing components for new products and delays in starting volume production. New products may also not be commercially successful. Any of these adverse developments could lead to loss of market share and inability to achieve our anticipated revenue growth targets.

Customer order timing and other factors beyond our control may cause our operating results to fluctuate from period to period.

Changes in customer order timing and the existence of certain other factors beyond our control may cause our operating results to fluctuate from period to period. Such factors include:

- fluctuations in our customers' businesses;
- decisions by customers to reduce their purchases of our products;
- timing and recognition of revenues from customer orders;
- timing and market acceptance of new products or enhancements introduced by us or our competitors;
- availability of parts from our suppliers and the manufacturing capacity of our subcontractors;
- changes in the prices of our products or of our competitors' products; and
- fluctuations in foreign currency exchange rates.

We received in the past, and may receive in the future, several large orders in one quarter from a customer and then receive no orders from that customer in the next quarter. As a result, the timing of revenue recognition from customer orders can cause significant fluctuations in our operating results from quarter to quarter. In addition, our sales are reactive to changes in our customers' businesses. For instance, a customer that placed a large order in one period could subsequently experience a downturn in business and, as a result, could cancel an order or reduce the amount of products it purchases from us in future periods.

Delays in shipments near the end of a reporting period due to rescheduling or cancellation by customers or unexpected production delays experienced by us may cause revenue in the period to decline significantly and may have a material adverse effect on our operating results for that period.

In addition, we or our competitors may raise or lower prices of products in response to market demands or competitive pressures. If we lower the prices of our products, or if our competitors lower the prices of their products such that demand for our products weakens, our revenue for one or more quarters may decline and our operating results would be adversely affected.

As a result of these factors, our results of operations for any quarter are not necessarily indicative of results to be expected in future periods.

If we experience a significant disruption in, or breach in security of, our information technology systems, our business may be adversely affected.

We rely on information technology systems throughout the Company to manage orders, process shipments to customers, manage inventory levels and maintain financial, customer and employee information. Like other global companies, we have experienced threats to data and systems, including by perpetrators of random or targeted malicious cyberattacks, computer viruses, malware, worms, bot attacks or other destructive or disruptive software and attempts to misappropriate customer information and cause system failures and disruptions. Certain other events could also result in the disruption of our systems, including power outages, catastrophes, hardware and software failures and other unforeseen events. If we were to experience a significant period of disruption in information technology systems that involve our interactions with customers or suppliers, it could result in the loss of revenue and customers as well as significant response and mitigation costs, which would adversely affect our business. In addition, security breaches of our information technology systems could result in the misappropriation or unauthorized disclosure of confidential information belonging to us or to our employees, partners, customers or suppliers, which could result in significant financial or reputational damage to us, as well as litigation, regulatory enforcement actions, or other liabilities that could lead to substantial damages, fines, penalties and legal costs. We also expend substantial amounts to protect our information technology systems, and if we were to experience a significant breach in security of our information technology systems, we may need to materially increase such expenditures, which would adversely affect our results of operations.

Risks associated with data privacy issues, including evolving laws, regulations and associated compliance efforts, may adversely impact our business and financial results.

Legislation in various countries around the world with regard to cybersecurity, privacy and data protection is rapidly expanding and creating a complex compliance environment. We are subject to many privacy and data protection laws and regulations in the U.S. and around the world, some of which place restrictions on our ability to process personal data across our business. In particular, the General Data Protection Regulation (the “GDPR”), which became effective in May 2018, has caused more stringent data protection requirements in the EU and the European Economic Area (“EEA”). The GDPR imposes onerous accountability obligations requiring data controllers and processors to maintain a record of their data processing and implement policies as part of its mandated privacy governance framework. It also requires data controllers to be transparent and disclose to data subjects how their personal data is to be used; imposes limitations on retention of personal data; introduces mandatory data breach notification requirements; and sets higher standards for data controllers to demonstrate that they have obtained valid consent for certain data processing activities. We are subject to the supervision of local data protection authorities in those EU jurisdictions where we have business operations or are otherwise subject to the GDPR. Certain breaches of the GDPR requirements could result in substantial fines, which can be up to four percent of worldwide revenue or 20 million Euros, whichever is greater. In addition to the foregoing, a breach of the GDPR could result in regulatory investigations, reputational damage, orders to cease/change our use of data, enforcement notices, as well as potential civil claims, including class action type litigation where individuals suffered harm. Relatedly, following the United Kingdom’s withdrawal from the EEA and the EU, and the expiration of the transition period, from January 1, 2021, companies have to comply with both the GDPR and the GDPR as incorporated into United Kingdom national law, the latter regime having the ability to separately fine up to the greater of £17.5 million or 4% of global revenue. On January 1, 2021, the United Kingdom became a third country for the purposes of the GDPR. Similarly, California has enacted the California Consumer Privacy Act, or CCPA, which took effect on January 1, 2020. The CCPA creates individual privacy rights for California consumers and increases the privacy and security obligations of entities handling certain personal data. The CCPA provides for civil penalties for violations, as well as a private right of action for data breaches that is expected to increase data breach litigation. Additionally, the California Privacy Rights Act (the “CPRA”) was recently enacted in California. The CPRA will impose additional data protection obligations on covered companies doing business in California, including additional consumer rights processes, limitations on data uses, new audit requirements for higher risk data, and opt outs for certain uses of sensitive data. It will also create a new California data protection agency authorized to issue substantive regulations and could result in increased privacy and information security enforcement. The majority of the provisions will go into effect on January 1, 2023, and additional compliance investment and potential business process changes may be required. The CCPA and CPRA may increase our compliance costs and potential liability. Many similar laws have been proposed at the federal level and in other states. Any liability from our failure to comply with the requirements of these laws could adversely affect our financial condition and results of operations.

We have invested, and continue to invest, human and technology resources in our GDPR and CCPA compliance efforts and our data privacy compliance efforts in general. These compliance efforts may be time-intensive and costly. Despite those efforts, there is a risk that we may be subject to fines and penalties, litigation and reputational harm if we fail to protect the privacy of third party data or to comply with the GDPR, CCPA or other applicable regimes.

Changes in foreign currency rates could have a material adverse effect on our financial position, results of operations, and cash flows.

A portion of our revenue is derived from our European and Asian operations and includes transactions in Euros, British Pounds and Japanese Yen, while our products are mainly manufactured in the U.S., the U.K., Germany and China. In the event of a decline in the value of the Euro, British Pounds or Japanese Yen, we would typically experience a decline in our revenues and profit margins. If we increase the selling prices on our products sold in Europe and Asia in order to maintain profit margins and recover costs, we may lose customer sales to lower cost competitors.

Additionally, balances maintained in foreign currencies create additional financial exposure to changing foreign currency rates. If foreign currency rates were to change significantly, we could incur material losses. While we use foreign currency contracts and other risk management techniques to hedge our foreign currency exposure, we cannot be certain that our efforts will be adequate to protect us against significant foreign currency fluctuations or that such efforts will not expose us to additional exchange rate risks.

Our reliance on international operations subjects us to risks not typically faced by companies operating exclusively in the U.S.

During the year ended December 31, 2020, approximately 62% of our revenues were from customers outside of the U.S. The scope of our international operations subjects us to risks that could materially impact our results of operations, including:

- foreign exchange rate fluctuations;
- increases in shipping costs;

- longer customer payment cycles;
- greater difficulty in collecting accounts receivable;
- use of incompatible systems and equipment;
- problems with staffing and managing foreign operations in diverse cultures;
- trade tariffs, trade barriers and export/import controls;
- transportation delays and interruptions;
- increased vulnerability to the theft of, and reduced protection for, intellectual property rights;
- government currency control and restrictions, delays, penalties or required withholdings on repatriation of earnings;
- compliance with foreign laws and regulations, including those that potentially conflict with other jurisdictions;
- the impact of recessionary foreign economies; and
- natural disasters, wars, health epidemics and acts of terrorism.

We also are subject to risks that our operations outside the U.S. could be conducted by our employees, contractors, service providers, representatives or agents in ways that violate the Foreign Corrupt Practices Act or other similar anti-bribery laws. Any such violations could have a negative impact on our business and could result in government investigations and/or injunctive, monetary or other penalties. Moreover, our anti-bribery policy and procedures may be violated by third-party sales representatives or other agents that help sell our products or provide other services. Such representatives or agents are not our employees and it may be more difficult to oversee their conduct, which may increase the risk of violations of anti-bribery laws.

Increased outsourcing of components manufacturing to manufacturers outside the U.S. leads to additional risks that could negatively impact our business.

We are increasingly outsourcing the manufacture of subassemblies to suppliers based in China, Southeast Asia and elsewhere overseas in order to reduce our manufacturing cost. However, economic, political or trade problems with foreign countries and public health crises could substantially impact our ability to obtain critical parts needed in the timely manufacture of our products, or could substantially increase the costs of these parts. Additionally, this practice increases our vulnerability to the theft of, and reduced protection for, our intellectual property.

Increases in tariffs, trade restrictions or taxes on our products could have an adverse impact on our operations.

Our sales channels and supply chain in the international marketplace make us subject to tariffs, trade restrictions and other taxes when the raw materials or components we purchase, and the products we sell, cross international borders. Trade tensions between the U.S. and China, as well as those between the U.S. and other countries have escalated in recent years. U.S. tariff impositions against Chinese exports have been followed by retaliatory Chinese tariffs on U.S. exports to China. Certain of the raw materials and components we purchase from China are or were subject to these tariffs, which have increased our manufacturing costs and have made our products less competitive than those of our competitors whose inputs are not subject to these tariffs. Certain of our finished products manufactured in the U.S. have been and may in the future be subject to retaliatory tariffs in China, which increase our cost and make our products less competitive than those of our competitors whose products are not subject to such retaliatory tariffs. If heightened tariffs were to be imposed in the future, we may not be able to mitigate the impacts of such tariffs, and our business, results of operations and financial position could be materially adversely affected. Products we sell into certain other foreign markets could also become subject to retaliatory tariffs, making our products uncompetitive to similar products not subjected to such import tariffs. Further changes in U.S. trade policies, tariffs, taxes, export restrictions or other trade barriers, or restrictions on raw materials or components may limit our ability to produce products, increase our manufacturing costs, decrease our profit margins, reduce the competitiveness of our products, or inhibit our ability to sell products or purchase raw materials or components, which would have a material adverse effect on our business, results of operations and financial condition.

The U.K.'s withdrawal from the EU may have a negative effect on global economic conditions, financial markets and our business, which could reduce the price of our common shares.

We are a multinational company with worldwide operations, including business operations in the U.K., Germany and China. Following a national referendum and enactment of legislation by the U.K. government, the U.K. withdrew from the European Union on January 31, 2020 and entered into a transition period. On December 24, 2020, the UK and the EU announced that they had concluded their negotiations relating to their future trading relationship. The agreed terms are contained in the EU—UK Trade and Cooperation Agreement ("TCA"), which became binding on both the EU and the UK on January 1, 2021. While agreement on the

terms of the TCA has avoided a “no deal” Brexit scenario, and provides in principle for quota and tariff-free trading of goods, it is nevertheless expected that the TCA will result in the creation of non-tariff barriers (such as increased shipping and regulatory costs and complexities) to the trade in goods between the UK and the EU. Further, the TCA does not provide for the continued free movement of services between the UK and the EU and imposes additional restrictions on the free movement of people between the UK and the EU.

The TCA also grants to each of the UK and the EU the ability, in certain circumstances, to unilaterally impose tariffs on one another. In the event of such an imposition, any additional tariffs may have a material adverse impact on us as well as the stability of UK-EU trade more generally. Any uncertainty as to UK or EU government policies and, in particular, whether any such policy may result in the imposition of reciprocal tariffs, may depress economic activity or have an adverse impact on our business and operations.

It remains to be seen whether the initial implementation of, and adjustment of UK-EU trading processes for, the TCA could increase our costs or otherwise negatively impact our sales of products, mobility of our personnel and our access to capital.

Others may violate our intellectual property rights and cause us to incur significant costs to protect our rights.

Our future success depends in part upon the protection of our intellectual property rights, including patents, trade secrets, know-how and continuing technological innovation. We do not have personnel dedicated to the oversight, organization and management of our intellectual property. There can be no assurance that the steps we take to protect our intellectual property rights will be adequate to prevent misappropriation or disclosure. It is possible that, despite our efforts, other parties may use, obtain or try to copy our technology and products. There can be no assurance that other companies are not investigating or developing other technologies similar to ours, that any patents will be issued from any applications filed by us, or that, if patents are issued, the claims allowed will be sufficient to deter or prohibit others from marketing similar products. In addition, our patents may be challenged, invalidated or circumvented in a legal or administrative proceeding. Policing unauthorized use of our intellectual property rights is difficult and time consuming and may involve initiating claims or litigation against third parties for infringement of our proprietary rights, which could be costly and divert management resources.

Our efforts to protect our intellectual property rights against infringement may not be effective in some foreign countries where we operate or sell our products. If we fail to adequately protect our intellectual property in these countries, we may lose significant business to our competitors.

Our operating results would suffer if we are unable to successfully defend against infringement claims by third parties.

We have received in the past, and could receive in the future, notices from third parties alleging that our products infringe patent or other proprietary rights. These allegations could result in significant costs and diversion of the attention of management. Adverse consequences may also apply if we fail to avoid or successfully defend litigation for infringement or misappropriation of proprietary rights of third parties. We could be required to pay substantial amounts for damages or be enjoined from using the technology deemed to be infringing, or from using, making or selling products deemed to be infringing, any of which could adversely affect our operating results. If we have supplied infringing products to third parties, we may be obligated to indemnify these third parties for any damages that they may be required to pay to the patent holder and for any losses that they may sustain as a result of the infringement.

We operate in highly competitive industries and, if we lose competitive advantages, our business would suffer adverse consequences.

Some of our competition comes from established competitors that have greater financial, engineering, manufacturing and marketing resources than we do. Our competitors will continue to improve the design and performance of their existing products and introduce new products. It is possible that we may not successfully differentiate our current and proposed products from the products of our competitors, or that the marketplace will not consider our products to be superior to competing products. To remain competitive, we will be required to invest heavily in research and development, marketing and customer service and support. However, we may not be able to make the necessary technological advances to maintain our competitive position and our products may not receive market acceptance. These factors would cause us not to be able to compete successfully in the future. Increased competition may also result in price reductions, reduced profit margins, loss of market share and an inability to generate cash flows that are sufficient to maintain or expand our new product development programs.

Our results of operations will be adversely affected if we fail to successfully integrate future acquisitions or to grow the acquired businesses.

As part of our business strategy, we expect to broaden our product and service offerings by acquiring businesses, technologies, assets and product lines that, we believe, complement or expand our existing businesses. In recent years, we have made a number of acquisitions, including the acquisitions of ARGES GmbH, Med X Change, Inc., Ingenia-CAT, S.L., and Zettlex Holdings Limited, and

we expect to continue to make acquisitions in the future. We may fail to successfully identify appropriate acquisition candidates or integrate acquired businesses, products, technologies or personnel into our businesses and, as a result, may fail to realize the synergies, cost savings and other benefits expected from the acquisitions. If we are not able to successfully achieve these objectives, the anticipated benefits of such acquisitions may not be realized fully or at all, and our results of operations could be adversely affected. As a result of the number of recent and expected future acquisitions in a relatively short amount of time, these risks may be heightened due to limited resources available to integrate these new businesses. Our acquisition activities may divert management's attention from our regular operations. Managing a larger and more geographically dispersed operation and product portfolio could also pose challenges for our management team.

Further, our ability to maintain and increase profitability of acquired businesses will depend on our ability to manage and control operating expenses and to generate and sustain increased levels of revenue. Our expectations to achieve more consistent and predictable levels of revenue and to increase profitability as a result of any acquisition may not be realized. Such revenues and profitability may even decline as we integrate operations into our businesses. If revenues of acquired businesses decline or grow more slowly than we anticipate, or if their operating expenses are higher than we expect, we may not be able to sustain or increase their profitability, in which case our financial condition will suffer and our stock price could decline. In addition, through our acquisitions, we may assume liabilities, losses or costs for which we are not indemnified or insured or for which our indemnity or insurance is inadequate. Any such liabilities may have a material adverse effect on our financial position or results of operations.

If we do not attract and retain our key personnel, our ability to execute our business strategy will be limited.

Our success depends, to a significant extent, upon the continued service of our executive officers, key management and technical personnel, particularly our experienced engineers, and upon our ability to continue to attract, retain, and motivate qualified personnel. The competition for these employees is intense. The loss of the services of one or more of our key personnel could have a material adverse effect on our operating results. In addition, there could be a material adverse effect on us should the turnover rates for engineers and other key personnel increase significantly or if we are unable to continue to attract qualified personnel.

Our success also depends on our ability to execute leadership succession plans. The inability to successfully transition key management roles could have a material adverse effect on our operating results.

We have undertaken restructuring and realignment activities in the past, and we will continue to assess our operating and cost structure in the future. These actions may not improve our financial position, and may ultimately prove detrimental to our operations and sales.

We have undertaken restructuring and realignment activities in the past, and we will continue to assess our operating and cost structure in the future. Our ability to reduce operating expenses and improve gross margin is dependent upon the nature of the actions we take and our subsequent ability to implement those actions and realize expected cost savings and gross margin improvements. We are taking, and may need to take in the future, additional restructuring actions, such as eliminating or consolidating certain of our facilities or operations, reducing our headcount, or eliminating certain positions. Failure to successfully implement such restructuring activities could adversely affect our ability to meet customer demand for our products and could increase the cost of production versus our projections, both of which could adversely impact our operating results. Further, expenses and cost inefficiencies associated with our restructuring activities, including severance costs and the loss of trained employees with knowledge of our business and operations, could exceed our expectations and negatively impact our financial results. We are also taking actions to improve our price realization, reduce our overhead and cost of poor quality, and improve our material productivity. Failure to successfully implement these actions could negatively impact our ability to achieve our gross margin goals.

Product defects or problems with integrating our products with other vendors' products used by our customers may seriously harm our business and reputation.

We produce complex products that can contain latent defects or performance problems. This could happen to both existing and new products. Such defects or performance problems could result in litigation against us and be detrimental to our business and reputation.

In addition, customers frequently integrate our products with other vendors' products. When problems occur in a combined environment, it may be difficult to identify the source of the problem. These problems may cause us to incur significant warranty and repair costs, divert the attention of our engineering personnel from our product development efforts, and cause significant customer relationship issues, any of which could adversely affect our results of operations and financial condition.

Disruptions in the supply of certain key components and other goods from our suppliers, including limited or single source suppliers, could have an adverse effect on the results of our business operations, and could damage our relationships with customers.

The production of our products requires a wide variety of raw materials, key components and other goods that are generally available from alternate sources of supply. However, certain critical raw materials, key components and other goods required for the production of some of our principal products are available from limited or a single source of supply. If a single source supplier decides to stop producing a key component for us, or if the receipt of certain limited source or single source materials is otherwise delayed, our relationship with customers may be harmed if such decisions or delays cause us to miss our scheduled shipment deadlines. Our current or alternative sources may not be able to continue to meet all of our demands on a timely basis. If suppliers or subcontractors experience difficulties or fail to meet our manufacturing requirements, our business would be harmed until we are able to secure alternative sources, if any, on commercially reasonable terms. A prolonged inability to obtain certain raw materials, key components or other goods is possible and could have a significant adverse effect on our business operations, damage our relationships with customers, or even lead to permanent loss of customer orders.

In addition, certain of our businesses buy components, including limited or sole source items, from competitors of our other businesses. This dynamic may adversely impact our relationship with these suppliers. For example, these suppliers could increase the price of those components or reduce their supply of those components to us, which could have a significant adverse effect on our business operations or lead to permanent loss of customer orders.

If we fail to accurately forecast component and raw material requirements for our products, we could incur additional costs and experience significant delays in shipments, which could have an adverse effect on the results of our business operations, and could damage our relationships with customers.

We use rolling forecasts based on anticipated product orders to determine our production requirements. It is important that we accurately predict both the demand for our products and the lead times required to obtain the necessary components and raw materials to manufacture our products. Lead times for our components and raw materials vary significantly and depend on multiple factors, including the specific supplier requirements, the size of the order, contract terms and current market demand. For substantial increases in our sales levels of certain products, some of our suppliers may need significant lead time. If we overestimate our component and raw material requirements, we may have excess inventory, which would increase our costs. If we underestimate our component and raw material requirements, we may have inadequate inventory, which could interrupt and delay delivery of our products to customers. Any of these occurrences could adversely affect our results of operations and damage our relationships with customers.

Production difficulties and product delivery delays or disruptions could have a material adverse effect on our business.

We assemble our products at our facilities in the U.S., the U.K., Germany and China. Each of our products is typically manufactured in a single manufacturing location. If production activities at any of our manufacturing facilities were disrupted by a natural disaster, health epidemic, and act of terrorism or otherwise, our operations would be negatively impacted until we could establish alternative production and service operations. Significant production difficulties could be the result of:

- mistakes made while transferring manufacturing processes between locations;
- changing process technologies;
- ramping production;
- installing new equipment at our manufacturing facilities;
- implementing new information technology systems;
- shortage of key components; and
- loss of electricity or employees' access to the manufacturing facilities due to man-made and natural disasters.

From time to time, we determine to consolidate certain of our manufacturing facilities, or otherwise move our production of certain products to another facility. Moving complicated manufacturing facilities involves various risks, including the inability to commence production within the cost and timeframe estimated, damage to equipment, inability to produce a high-quality product, shipping delays, distraction to management and employees, and the inability to hire and retain a sufficient number of qualified personnel. Failure to successfully move manufacturing facilities due to these and other unforeseen risks could adversely affect our ability to meet customer demand, harm our relationships with customers, and adversely impact our results of operations and financial position.

In addition, we may experience product delivery delays in the future. We ship a significant portion of our products to our customers through independent package delivery and import/export companies. We also ship our products through national trucking firms, overnight carrier services and local delivery practices. If one or more of the key package delivery or import/export providers experience significant disruption in services or institutes a significant price increase, the delivery of our products could be disrupted or delayed. Such events could cause us to incur increased shipping costs that could not be passed on to our customers, negatively impacting our profitability and our relationships with customers.

We are subject to extensive and dynamic medical device regulation, which may impede or hinder the approval or sale of our products and, in some cases, may ultimately result in an inability to obtain approval of certain products or may result in the recall or seizure of previously approved products.

Some of our products and the related sales and marketing development activities and manufacturing processes are subject to extensive and rigorous regulation by the FDA pursuant to the Federal Food, Drug, and Cosmetic Act (the "FDCA"), by comparable agencies in foreign countries, and by other regulatory agencies and governing bodies. Under the FDCA, medical devices must receive FDA clearance or approval or an exemption from such clearance or approval before they can be commercially marketed in the U.S. In the EU, we are required to comply with applicable medical device directives (including the Medical Devices Directive) and to obtain CE Mark certification in order to market medical devices. The CE Mark is applied following approval from an independent notified body or declaration of conformity. The process of obtaining marketing approval or clearance from the FDA or by comparable agencies in foreign countries for new products, or with respect to enhancements or modifications to existing products, could:

- take a significant period of time;
- require substantial resources;
- involve rigorous pre-clinical and clinical testing, as well as increased post-market surveillance;
- require changes to products; and
- result in limitations on the indicated uses of products.

In addition, exported devices are subject to the regulatory requirements of each country to which the device is exported. Some countries do not have medical device regulations, but in most foreign countries, medical devices are regulated. Most countries outside of the U.S. require that product approvals be renewed or recertified on a regular basis, generally every four to five years. The renewal or recertification process requires that we evaluate any device changes and any new regulations or standards relevant to the device and conduct appropriate testing to document continued compliance. Where renewal or recertification applications are required, they may need to be renewed and/or approved in order for us to continue selling our products in those countries. There can be no assurance that we will receive the required approvals for new products or modifications to existing products on a timely basis or that any approval will not be subsequently withdrawn or conditioned upon extensive post-market study requirements.

In April 2017, the European Parliament passed the Medical Devices Regulation (Regulation 2017/745), which repeals and replaces the EU Medical Devices Directive and the Active Implantable Medical Devices Directive. Unlike directives, which must be implemented into the national laws of the member states of EEA, the regulations would be directly applicable, i.e., without the need for adoption of EEA member state laws implementing them, in all EEA member states and are intended to eliminate current differences in the regulation of medical devices among EEA member states. The Medical Devices Regulation ("MDR"), among other things, is intended to establish a uniform, transparent, predictable and sustainable regulatory framework across the EEA for medical devices and ensure a high level of safety and health while supporting innovation. The MDR was meant to become applicable in May 2020. However, on April 23, 2020, the European Council and Parliament postponed the effective date of the MDR to May 2021. Once applicable, the MDR will among other things:

- strengthen the rules on placing devices on the market and reinforce surveillance once they are available;
- establish explicit provisions on manufacturers' responsibilities for the follow-up of the quality, performance and safety of devices placed on the market;
- improve the traceability of medical devices throughout the supply chain to the end-user or patient through a unique identification number;
- set up a central database to provide patients, healthcare professionals and the public with comprehensive information on products available in the EU; and
- strengthen rules for the assessment of certain high-risk devices, such as implants, which may have to undergo an additional check by experts before they are placed on the market.

We face uncertainties as the MDR is rolled out and enforced by the European Commission and EU competent authorities, creating risks in several areas including the CE Marking process and data transparency in the upcoming years.

The FDA and other worldwide regulatory agencies actively monitor compliance with local laws and regulations through review and inspection of design and manufacturing practices, recordkeeping, reporting of adverse events, labeling and promotional practices. The FDA can ban certain medical devices; detain or seize adulterated or misbranded medical devices; order recall, repair, replacement or refund of these devices; and require notification of healthcare professionals and others with regard to medical devices that present unreasonable risks of substantial harm to the public health. The FDA can take action against a company that promotes "off-label" uses. The FDA may also enjoin and restrain a company for certain violations of the FDCA and regulations pertaining to medical devices, or initiate action for criminal prosecution of such violations. Any adverse regulatory action, depending on its magnitude, may restrict a company from effectively marketing and selling its products, may limit a company's ability to obtain future premarket clearances or approvals, and could result in a substantial modification to the company's business practices and operations. International sales of medical devices manufactured in the U.S. that are not approved by the FDA for use in the U.S., or that are banned or deviate from lawful performance standards, are subject to FDA export requirements.

Regulations regarding the development, manufacture and sale of medical devices are evolving and subject to future changes. From time to time, legislation is drafted and introduced in Congress that could significantly change the statutory provisions governing the regulation of medical devices. The FDA may also change its clearance and approval policies, adopt additional regulations or revise existing regulations, or take other actions that may prevent or delay approval or clearance of our future products under development or impact our ability to modify our currently cleared products on a timely basis. Over the last several years, the FDA has proposed reforms to its 510(k) clearance process, and such proposals could include increased requirements for clinical data and a longer review period, or could make it more difficult for manufacturers to utilize the 510(k) clearance process for their products. In addition, FDA regulations and guidance are often revised or reinterpreted by the FDA in ways that may significantly affect our business and our products. Any new statutes, regulations, or revisions or reinterpretations of existing regulations may impose additional costs, lengthen regulatory review time for, or make it more difficult to obtain approval for, the manufacturing, marketing or distribution of our products. Such changes could, among other things, require additional testing prior to obtaining clearance or approval, changes to manufacturing methods, recall, replacement or discontinuance of our products, or require additional record keeping.

Failure to comply with regulatory requirements could have a material adverse effect on our business, financial condition and results of operations. Later discovery of previously unknown problems with a product or manufacturer could result in fines, delays or suspensions of regulatory clearances or approvals, seizures or recalls of products, physician advisories or other field actions, operating restrictions and/or criminal prosecution. We may also initiate field actions as a result of a failure to strictly comply with our internal quality policies. The failure to receive product approval clearance on a timely basis, suspensions of regulatory clearances, seizures or recalls of products, physician advisories or other field actions, or the withdrawal of product approval by the FDA or by comparable agencies in foreign countries could have a material adverse effect on our business, financial condition and results of operations.

Our products and operations are subject to various foreign and U.S. federal and state healthcare laws and regulations, which could expose us to penalties.

Our products and our operations may be directly, or indirectly through our customers, subject to various foreign and U.S. federal and state healthcare laws and regulations, including, without limitation, anti-kickback, false claims and privacy statutes. These laws may restrict, among other things, the development, sale, marketing and distribution of our products. These laws include:

- the federal Anti-Kickback Statute, which prohibits, among other things, persons from knowingly and willfully soliciting, receiving, offering or paying remuneration, directly or indirectly, to induce, or in return for, the purchase or recommendation of an item or service reimbursable under a federal healthcare program, such as the Medicare and Medicaid programs;
- federal civil and criminal false claims laws, including the False Claims Act, and civil monetary penalty laws, which prohibit, among other things, individuals or entities from knowingly presenting, or causing to be presented, false or fraudulent claims for payment from Medicare, Medicaid, or other third-party payors;
- the federal Health Insurance Portability and Accountability Act of 1996, or HIPAA, which created new federal criminal statutes that prohibit executing a scheme to defraud any healthcare benefit program and making false statements relating to healthcare matters;
- HIPAA as amended by the Health Information Technology for Economic and Clinical Health Act, or HITECH, and its implementing regulations, which imposes certain requirements relating to the privacy, security, and transmission of individually identifiable health information;
- the federal physician "Sunshine Act" requirements, which require manufacturers of drugs, devices, biologics, and medical supplies to report annually to Centers for Medicare & Medicaid Services (the "CMS") information related to (i) payments

and other transfers of value to physicians (as defined by statute), certain other healthcare providers (beginning in 2022), and teaching hospitals, and (ii) ownership and investment interests held by physicians and their immediate family members;

- state and foreign law equivalents of each of the above federal laws, such as (i) anti-kickback and false claims laws that may apply to items or services reimbursed by any third-party payors, including commercial insurers; (ii) state laws that require device manufacturers to comply with the industry's voluntary compliance guidelines and the applicable compliance guidance promulgated by the federal government, or otherwise restrict payments that may be made to healthcare providers and other potential referral sources; (iii) state laws that require device manufacturers to report information related to payments and other transfers of value to physicians and other healthcare providers or marketing expenditures; and (iv) state laws governing the privacy and security of health information in certain circumstances, many of which differ from each other in significant ways, thus complicating compliance efforts.

Efforts to ensure that our business operations comply with applicable healthcare laws may involve substantial costs. If our operations are found to be in violation of any of these laws or any other governmental regulations that may apply to us, we may be subject to, without limitation, civil, criminal and administrative penalties, damages, monetary fines, disgorgement, possible exclusion from participation in governmental healthcare programs, contractual damages, reputational harm, diminished profits and future earnings and curtailment or restructuring of our operations. Further, defending against any such actions can be costly, time-consuming and may require significant financial and personnel resources. Therefore, even if we are successful in defending against any such actions that may be brought against us, our business may be impaired.

Our business is indirectly subject to healthcare industry cost containment and healthcare reform measures that could result in reduced sales of our products.

Several of our customers rely on third party payors, such as government programs and private health insurance plans, to reimburse some or all of the cost of the procedures in which our products are used. The continuing efforts of governments, insurance companies and other payors of healthcare costs to contain or reduce those costs could lead to patients being unable to obtain approval for payment from these third-party payors for procedures in which our products are used. If that occurs, sales of medical devices may decline significantly and our customers may reduce or eliminate purchases of our products, or demand further price reductions. The cost containment measures that healthcare payors are instituting, both in the U.S. and internationally, could reduce our revenues and harm our operating results.

In addition, in the U.S. and other jurisdictions, there have been, and we expect there will continue to be, a number of legislative and regulatory changes and proposed changes to reform healthcare systems. Various elements of healthcare reforms, such as comparative effectiveness research, an independent payment advisory board, payment system reforms, including shared savings pilots, and other provisions, could meaningfully change the way healthcare is developed and delivered and may have material adverse impact on numerous aspects of our business, results of operations and financial condition.

Changes in government regulations related to our business or our products could reduce demand for our products or increase our expenses.

We are subject to many governmental regulations, including, but not limited to, the laser radiation safety regulations of the Radiation Control for Health and Safety Act administered by the Center for Devices and Radiological Health, a branch of the FDA, and certain health regulations related to the manufacture of products using beryllium, an element used in some of our products. Among other things, these regulations require us to file annual reports, to maintain quality control and sales records, to perform product testing, to distribute appropriate operating manuals, to conduct safety reviews, to incorporate design and operating features in products sold to end-users, and to certify and label our products. Depending on the class of the product, various warning labels must be affixed and certain protective devices must be installed.

We are also subject to regulatory oversight, including comparable enforcement mechanisms, in the markets we serve. We compete in many markets in which we and our customers must comply with federal, state, local and international regulations, such as environmental, health and safety and food and drug regulations. We develop, configure and market our products to meet customer needs created by those regulations. Any significant changes could reduce demand for our products or increase our expenses, which in turn could adversely affect our business, financial condition and results of operations.

Compliance or the failure to comply with current and future environmental regulations could result in significant costs.

Our operations are subject to a variety of federal, state, local and international environmental regulations relating to the manufacture of products using beryllium. We are subject to regulations of the Environmental Protection Agency in the U.S. and comparable authorities in other countries. If we fail to comply with any present or future regulations, we could be subject to regulatory fines.

Future developments, administrative actions or liabilities relating to environmental matters could have a material adverse effect on our business, results of operations or financial condition. It is difficult to anticipate how such regulations will be implemented and enforced. We continue to evaluate the necessary steps for compliance with regulations as they are enacted. Certain regulations may require us to redesign our products to ensure compliance with the applicable standards. These redesigns may adversely affect the performance of our products, add greater testing lead-times for product introductions and reduce our profitability.

If we fail to implement new information technology systems successfully, our business could be adversely affected.

We rely on centralized information systems throughout the Company to keep financial records, process orders, manage inventory, process shipments to customers, and operate other critical functions. We are in the process of upgrading our information technology infrastructure, including implementing new enterprise resource planning ("ERP") systems and other complementary information technology systems. We have invested, and will continue to invest, significant capital and human resources in the upgrades and new ERP systems. Any disruptions, delays or deficiencies in the transition, design and implementation of the upgrades and new ERP systems, particularly any disruptions, delays or deficiencies that impact our operations, could have a material adverse effect on our results of operations and cash flows.

We may experience difficulties as we transition to these new or upgraded systems and processes, including loss of data and the ability to process customer orders, ship products, provide services and support to our customers, issue sales invoices, collect accounts receivable, fulfill contractual obligations, satisfy internal and external financial reporting requirements in a timely manner, or otherwise run our business. We may also experience decreases in productivity as our personnel implement these systems and become proficient in the new systems. In addition, as we are dependent upon our ability to gather and promptly transmit accurate information to key decision makers, our business, results of operations and financial condition may be materially and adversely affected if our information technology infrastructure does not allow us to transmit accurate information, even for a short period of time. Furthermore, the transition, design and implementation of upgrades and new ERP systems may be much more costly than we anticipated.

Our results of operations will be adversely affected if we fail to realize the full value of our intangible assets.

As of December 31, 2020, we had \$434.5 million of net intangible assets, including goodwill, on our consolidated balance sheet. Net intangible assets consist principally of goodwill, customer relationships, patents, trademarks, core technologies and technology licenses. Goodwill and indefinite-lived intangible assets are tested for impairment at least on an annual basis. All other intangible assets are evaluated for impairment should discrete events occur that call into question the recoverability of the intangible assets.

Adverse changes in our business, adverse changes in the assumptions used to determine the fair value of our reporting units, or the failure to grow our businesses may result in an impairment of our intangible assets, which could adversely affect our results of operations.

Our reliance upon third party distribution channels subjects us to credit, inventory, business concentration, and business failure risks beyond our control.

We sell many of our products through resellers, distributors, and system integrators. As these third parties tend to have more limited financial resources than OEM and end-user customers, they generally represent sources of increased credit risk. Any significant downturn in the business of our resellers, distributors, and systems integrators would in turn harm our results of operations and financial condition.

Our sales also depend upon the ability of our OEM customers to develop and sell systems that incorporate our products. Adverse economic conditions, large inventory positions, limited marketing resources and other factors influencing these OEM customers could have a substantial adverse effect on our financial results. We cannot assure investors that our OEM customers will not experience financial or other difficulties that could adversely affect their operations and, in turn, adversely affect our results of operations and financial condition.

Risks Relating to Taxes

Novanta Inc. may be subject to U.S. federal income taxation even though it is a non-U.S. corporation.

Novanta Inc. is a holding company organized in Canada and is subject to Canadian tax laws. However, we are also subject to U.S. tax rules and file U.S. federal income tax returns for our operations in the U.S. In addition, distributions or payments from entities in one jurisdiction to entities in another jurisdiction may be subject to income and/or withholding taxes. We do not intend to operate in a manner that will cause Novanta Inc. to be treated as engaged in a U.S. trade or business or otherwise be subject to U.S. federal income taxes on its income, but it generally will be subject to U.S. federal withholding tax on certain U.S.-sourced passive income items, such as dividends, royalties and certain types of interest.

Risks Relating to Our Common Shares and Our Capital Structure

We may require additional capital to adequately respond to business challenges or opportunities and repay or refinance our existing indebtedness, but this capital may not be available on acceptable terms or at all.

We may require additional capital to adequately respond to future business challenges or opportunities, including, but not limited to, the need to develop new products or enhance our existing products, the need to invest in cloud-based enterprise resource planning systems and other digital technology platforms to help accelerate the growth of our businesses, the need to build inventory or to invest other cash to support business growth, and opportunities to acquire complementary businesses and technologies.

As of December 31, 2020, we had outstanding debt of \$204.8 million under our amended and restated senior secured credit agreement (as amended, the “Third Amended and Restated Credit Agreement”) and \$395.2 million available to be drawn under the revolving credit facility. If we are unable to satisfy the conditions in the Third Amended and Restated Credit Agreement or our needs exceed the amounts available under the revolving credit facility, we may need to engage in equity or debt financings to obtain additional funds. If we raise additional funds through further issuances of equity or convertible debt securities, our existing shareholders could suffer significant dilution. Any new equity securities we issue could have rights, preferences and privileges superior to those of the holders of our common shares. Further, our Third Amended and Restated Credit Agreement restricts our ability to obtain additional debt financing from other sources. If we are unable to obtain adequate financing or obtain financing on terms satisfactory to us when we need it, our ability to continue to support our business growth and to respond to business challenges could be significantly limited. In addition, the terms of any additional equity or debt issuances may adversely affect the value and price of our common shares.

Our existing indebtedness could adversely affect our future business, financial condition and results of operations.

As of December 31, 2020, we had \$204.8 million of outstanding debt. This level of debt could have significant consequences on our future operations, including:

- reducing the availability of our cash flow to fund working capital, capital expenditures, research and development efforts, acquisitions and other general corporate purposes, and limiting our ability to obtain additional financing for these purposes;
- limiting our flexibility in planning for or reacting to, and increasing our vulnerability to, changes in our business, changes in the general economic environment, and market changes in the industries in which we operate; and
- placing us at a competitive disadvantage compared to our competitors that have less debt or are less leveraged.

Any of these factors could have an adverse effect on our business, results of operations and financial condition.

In addition, as a global corporation, we have significant cash reserves held in foreign countries. Some of these balances may not be immediately available to repay our debt.

Our Third Amended and Restated Credit Agreement contains covenants that limit our ability to engage in activities that may be in our long-term best interests. Our failure to comply with those covenants could result in an event of default which, if not cured or waived, could result in the acceleration of all of our borrowings thereunder.

General Risk Factors

The market price for our common shares may be volatile.

The market price of our common shares could be subject to wide fluctuations. These fluctuations could be caused by:

- quarterly variations in our results of operations;
- changes in earnings estimates by analysts;
- conditions in the markets we serve;
- trading phenomena such as “short squeeze”; or
- general market, political or economic conditions.

In addition, the stock market has experienced extreme price and volume fluctuations in recent years. These fluctuations have had a substantial effect on the market prices of many companies, often unrelated to the operating performance of the specific companies. These market fluctuations could adversely affect the price of our common shares.

Our effective tax rate is subject to fluctuation, which could impact our financial position and earnings per share.

Our effective tax rate is subject to fluctuation as the effective income tax rate for each year is a function of (a) taxable income levels in numerous tax jurisdictions, (b) our ability to utilize recognized deferred tax assets, (c) taxes, interest, and/or penalties resulting from tax audits and, (d) credits and deductions as a percentage of total taxable income. From time to time, the U.S., foreign and state governments make substantive changes to tax rules where significant judgment is required to determine the impact of such changes on our provision for income taxes, which may result in increased costs. Further, such tax law changes may cause our effective tax rate to fluctuate between periods.

We are exposed to the credit risk of some of our customers and to credit exposures in weakened markets, which could adversely affect our results of operations.

Customers with liquidity issues may lead to additional bad debt expense. There can be no assurance that our open credit customers will pay the amounts they owe to us or that the reserves we maintain will be adequate to cover such credit exposures. In addition, to the extent that turmoil in the credit markets or increases in interest rates make it more difficult for some customers to obtain financing, their ability to pay may be adversely impacted. Our customers' failure to pay and/or our failure to maintain sufficient reserves could have a material adverse effect on our future cash flows and financial condition.

If we fail to maintain appropriate internal controls in the future, we may not be able to report our financial results accurately, which may adversely affect our stock price and our business.

While our management and our independent registered public accounting firm concluded that our internal control over financial reporting was effective as of December 31, 2020, it is possible that material weaknesses may be identified in the future.

As part of our growth strategy, we intend to make additional acquisitions of privately held businesses. Prior to becoming part of our consolidated company, the acquired businesses would not be required to implement or maintain the disclosure controls and procedures or internal control over financial reporting that are required of public companies. We are required to integrate the acquired businesses into our consolidated company's system of disclosure controls and procedures and internal control over financial reporting, but we cannot provide assurance as to how long the integration process may take. Additionally, we may need to improve our internal control or those of any business we acquire and may be required to design enhanced processes and controls in order to make such improvements. This could result in significant costs to us and could require us to divert substantial resources, including management time and attention, from other activities.

If we are unable to maintain effective internal controls, we may not have adequate, accurate or timely financial information, and we may be unable to meet our reporting obligations as a publicly traded company or to comply with the requirements of the SEC or the Sarbanes-Oxley Act of 2002. This could result in a restatement of our financial statements, the imposition of sanctions, including the inability of registered broker dealers to make a market in our common shares, or investigation by regulatory authorities. Any such action or other negative results caused by our inability to meet our internal control and financial reporting requirements or to comply with legal and regulatory requirements could adversely affect our business and the trading price of our common shares. Material weaknesses in our internal control over financial reporting could also reduce our ability to obtain financing or could increase the cost of any financing we obtain.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

Our principal owned and leased properties as of December 31, 2020 are listed in the table below.

Location	Principal Use	Current Segment	Approximate Square Feet	Owned/Leased
Bedford, Massachusetts, United States	Manufacturing, R&D, Marketing, Sales and Administration	Photonics, Precision Motion & Corporate	147,000	Leased; expires in 2031
Ludwigsstadt, Germany	Manufacturing	Vision	105,000	Owned
Mukilteo, Washington, United States	Manufacturing, R&D, Marketing, Sales and Administration	Photonics	63,000	Owned
Syracuse, New York, United States	Manufacturing, R&D, Marketing, Sales and Administration	Vision	55,000	Leased; expires in 2029
Suzhou, People's Republic of China	Manufacturing, R&D, Marketing, Sales and Administration	Photonics, Vision & Precision Motion	55,000	Leased; expires in 2023
Poole, United Kingdom	Manufacturing, R&D, Marketing, Sales and Administration	Precision Motion	51,000	Building owned; land leased through 2078
Berlin, Germany	R&D, Marketing, Sales and Administration	Vision	51,000	Leased; expires in 2026

Additional manufacturing, research and development, sales, service and logistics sites are located in California, Florida, New York, Arizona and Oregon within the United States, and in Germany, United Kingdom, Czech Republic, Japan, China, Spain and Italy. These additional facilities cover approximately 360,000 square feet, of which approximately 300,000 square feet are leased and approximately 60,000 square feet are owned. These facilities are used by our Photonics, Vision and Precision Motion segments.

We consider our facilities suitable and adequate for the purposes for which they are used and do not anticipate difficulty in renewing existing leases or in finding alternative facilities. We believe all our properties have been properly maintained.

Item 3. Legal Proceedings

The Company is subject to various legal proceedings and claims that arise in the ordinary course of business. See Note 17 to Consolidated Financial Statements for additional information about legal proceedings involving the Company.

Item 4. Mine Safety Disclosures

Not applicable.

PART II

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

Market Information

The Company's common shares, no par value, are traded on the Nasdaq Global Select Market under the ticker symbol "NOVT".

Holders

As of the close of business on February 22, 2021, there were approximately 33 holders of record of the Company's common shares. Since many of the common shares are registered in "nominee" or "street" names, the Company believes that the total number of beneficial owners is considerably higher.

Dividend Policy

The Company has never declared or paid cash dividends on its common shares and does not anticipate paying any cash dividends in the foreseeable future.

Purchases of Equity Securities by the Issuer and Affiliated Purchaser

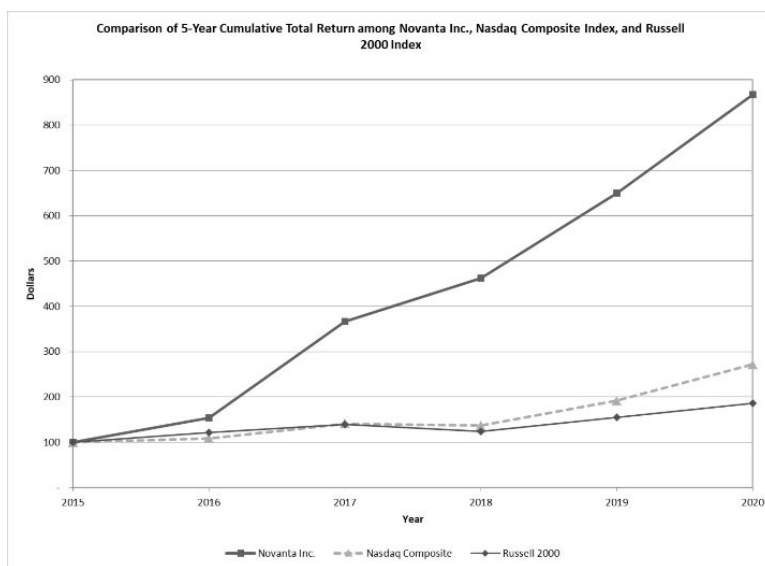
In October 2018, the Company's Board of Directors authorized a share repurchase plan (the "2018 Repurchase Plan") for the repurchase of up to an aggregate of \$25.0 million of the Company's common shares. The 2018 Repurchase Plan does not obligate the Company to acquire any particular amount of our common shares. No time limit was set for the completion of the 2018 Repurchase Plan, and the plan may be suspended or discontinued at any time. Since the adoption of the 2018 Repurchase Plan, the Company has repurchased 185 thousand shares for an aggregate purchase price of \$15.5 million at an average price of \$83.97 per share. We had \$9.5 million available for share repurchases under the 2018 Repurchase Plan as of December 31, 2020.

In February 2020, the Company's Board of Directors authorized a new share repurchase plan for the repurchase of up to an additional \$50.0 million of the Company's common shares (the "2020 Repurchase Plan"), to be commenced following the completion of the 2018 Repurchase Plan. While the 2020 Repurchase Plan is intended to generally offset dilution from equity awards to the Company's employees and directors, the plan does not obligate the Company to acquire any particular amount of our common shares. No time limit was set for the completion of the 2020 Repurchase Plan, and the plan may be suspended or discontinued at any time.

In an effort to preserve cash in light of the economic slowdown caused by the COVID-19 pandemic, we have temporarily suspended repurchases under our share repurchase plans since April 2020.

Performance Graph

The following graph compares the cumulative total return on the Company's common shares with the cumulative total return on the Nasdaq Composite Index and the Russell 2000 Index for the period from December 31, 2015 through December 31, 2020. The comparison assumes an investment of \$100 was made on December 31, 2015 in the Company's common shares and in each of the indices and, in the case of the indices, it also assumes reinvestment of all dividends. The performance shown is not necessarily indicative of future performance.



	December 31, 2015		December 31, 2016		December 31, 2017		December 31, 2018		December 31, 2019		December 31, 2020	
Novanta Inc.	\$	100.00	\$	154.19	\$	367.11	\$	462.56	\$	649.34	\$	867.99
Nasdaq Composite Index	\$	100.00	\$	108.87	\$	141.13	\$	137.12	\$	191.91	\$	271.64
Russell 2000 Index (1)	\$	100.00	\$	121.31	\$	139.12	\$	123.76	\$	155.35	\$	186.36

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Item 6. Selected Financial Data

The selected financial data set forth below is not necessarily indicative of results of future operations, and should be read in conjunction with “Management’s Discussion and Analysis of Financial Condition and Results of Operations” in Item 7 and the consolidated financial statements and related notes thereto in Item 8 of this Annual Report on Form 10-K to fully understand factors that may affect the comparability of the information presented below. The selected consolidated financial data in this section is not intended to replace the consolidated financial statements.

The consolidated statement of operations data for the years ended December 31, 2020, 2019 and 2018 and the consolidated balance sheet data as of December 31, 2020 and 2019 are derived from our audited consolidated financial statements included in this Annual Report on Form 10-K. The consolidated statement of operations data for the years ended December 31, 2017 and 2016 and the consolidated balance sheet data as of December 31, 2018, 2017 and 2016 are derived from our audited consolidated financial statements that are not included in this Annual Report on Form 10-K.

	Year Ended December 31,				
	2020	2019	2018	2017 (1)	2016
(In thousands, except per share data)					
Consolidated Statement of Operations Data:					
Revenue	\$ 590,623	\$ 626,099	\$ 614,337	\$ 521,290	\$ 384,758
Gross profit	244,517	262,085	261,528	220,531	162,452
Operating expenses	188,629	206,803	190,515	162,965	129,497
Operating income	55,888	55,282	71,013	57,566	32,955
Income before income taxes (2)	48,403	45,766	61,302	76,134	32,522
Income tax provision	3,882	4,993	10,207	13,827	10,519
Consolidated net income	44,521	40,773	51,095	62,307	22,003
Less: Net income attributable to noncontrolling interest	—	—	(1,986)	(2,256)	—
Net income attributable to Novanta Inc.	\$ 44,521	\$ 40,773	\$ 49,109	\$ 60,051	\$ 22,003
Earnings per common share attributable to Novanta Inc. (3):					
Basic	\$ 1.27	\$ 1.16	\$ 1.46	\$ 1.14	\$ 0.63
Diluted	\$ 1.25	\$ 1.15	\$ 1.43	\$ 1.13	\$ 0.63
Weighted average common shares outstanding—basic	35,144	35,030	34,913	34,817	34,694
Weighted average common shares outstanding—diluted	35,654	35,546	35,473	35,280	34,914

- (1) In 2017, the Company completed the acquisitions of WOM, Laser Quantum and ThingMagic businesses, which contributed a total of \$102.7 million in revenue for the year ended December 31, 2017. The operating results of these businesses have been included in the consolidated statement of operations since their respective acquisition dates.
- (2) In 2017, the Company acquired an additional approximately 35% of the outstanding shares of Laser Quantum and recorded a non-taxable gain of \$26.4 million, representing the excess of the fair value of the Company’s previously-held equity interest in Laser Quantum over its carrying value upon gaining control.
- (3) In the computation of earnings per common share attributable to Novanta Inc., net income attributable to Novanta Inc. included \$1.8 million and (\$20.2) million of redeemable noncontrolling interest redemption value adjustment for the years ended December 31, 2018 and 2017, respectively.

	December 31,				
	2020	2019	2018	2017 ⁽²⁾	2016
	(in thousands)				
Consolidated Balance Sheet Data:					
Cash and cash equivalents	\$ 125,054	\$ 78,944	\$ 82,043	\$ 100,057	\$ 68,108
Total assets (1)	865,179	869,736	719,576	726,703	425,637
Debt, current portion of long-term debt	5,508	5,031	4,535	9,119	7,366
Debt, long-term	194,927	215,334	202,843	225,500	70,554
Long-term liabilities, excluding debt (1)	79,214	102,384	44,282	44,567	25,717
Redeemable noncontrolling interest (3)	—	—	—	46,923	—
Total stockholders' equity	476,809	417,172	368,255	311,545	258,870

- (1) In 2019, the Company adopted ASU 2016-02, "Leases (Topic 842)," using the modified retrospective approach. ASU 2016-02 requires a lessee to recognize on the balance sheet a liability to make lease payments and a right-of-use asset representing its right to use the underlying asset for the lease term for both finance and operating leases. The Company reported operating lease right-of-use ("ROU") assets and operating lease liabilities of approximately \$35.2 million and \$39.2 million, respectively, as of December 31, 2019.
- (2) In 2017, the Company completed the acquisitions of WOM, Laser Quantum and ThingMagic businesses. Total assets acquired amounted to \$284.4 million as of the acquisition date. The acquisitions were financed with borrowings under the revolving credit facility in the aggregate amount of \$176.8 million.
- (3) In 2017, the Company acquired an additional approximately 35% of the outstanding shares of Laser Quantum, which increased our ownership position in Laser Quantum from approximately 41% to approximately 76%. The noncontrolling interest was considered a redeemable equity instrument and was presented as temporary equity on the consolidated balance sheet at the greater of the carrying value or the estimated redemption value of the noncontrolling interest. In 2018, the Company acquired the remaining approximately 24% of the outstanding shares of Laser Quantum from the noncontrolling interest shareholders.

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

Management’s Discussion and Analysis of Financial Condition and Results of Operations (“MD&A”) should be read in conjunction with the Consolidated Financial Statements and Notes included in Item 8 of this Annual Report on Form 10-K. The MD&A contains certain forward looking statements within the meaning of the United States Private Securities Litigation Reform Act of 1995, Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. In addition to historical financial information, the following discussion and analysis contains forward-looking statements that involve risks, uncertainties and assumptions. These forward-looking statements include, but are not limited to, anticipated impacts of the COVID-19 pandemic on our business, financial results and financial condition; our belief that the Purchasing Managers Index (“PMI”) may provide an indication of the impact of general economic conditions on our sales into the advanced industrial end market; our strategy; anticipated financial performance; expected liquidity and capitalization; drivers of revenue growth and our growth expectations in various markets; management’s plans and objectives for future operations, expenditures and product development, and investments in research and development; business prospects; potential of future product releases and expansion of our product and service offerings; anticipated revenue performance; industry trends; market conditions; our competitive positions; changes in economic and political conditions; changes in accounting principles; changes in actual or assumed tax liabilities; expectations regarding tax exposures; anticipated reinvestment of future earnings and dividend policy; anticipated expenditures in regard to the Company’s benefit plans; future acquisitions and integration and anticipated benefits from acquisitions and dispositions; anticipated economic benefits and expected costs of restructuring programs; ability to repay our indebtedness; our intentions regarding the use of cash; expectations regarding legal and regulatory requirements and our compliance thereto; and other statements that are not historical facts. Our actual results could differ materially from those anticipated in these forward-looking statements as a result of various important factors, including those set forth in Item 1A of this Annual Report on Form 10-K under the heading “Risk Factors.” The words “anticipates,” “believes,” “expects,” “intends,” “future,” “could,” “estimates,” “plans,” “would,” “should,” “potential,” “continues,” and similar words or expressions (as well as other words or expressions referencing future events, conditions or circumstances) identify forward looking statements. Readers should not place undue reliance on any such forward looking statements, which speak only as of the date they are made. Management and the Company disclaim any obligation to publicly update or revise any such statements to reflect any change in its expectations or in events, conditions, or circumstances on which any such statements may be based, or that may affect the likelihood that actual results will differ from those contained in the forward looking statements, except as required under applicable law.

Business Overview

Novanta Inc. and its subsidiaries (collectively referred to as, the “Company”, “Novanta”, “we”, “us”, “our”) is a leading global supplier of core technology solutions that give medical and advanced industrial original equipment manufacturers (“OEMs”) a competitive advantage. We combine deep proprietary technology expertise and competencies in photonics, vision and precision motion with a proven ability to solve complex technical challenges. This enables us to engineer core components and sub-systems that deliver extreme precision and performance, tailored to our customers' demanding applications.

End Markets

We primarily operate in two end markets: the medical market and the advanced industrial market.

Medical Market

For the year ended December 31, 2020, the medical market accounted for approximately 56% of our revenue. Revenue from our products sold to the medical market is generally affected by hospital and other healthcare provider capital spending, growth rates of surgical procedures, changes in regulatory requirements and laws, aggregation of purchasing by healthcare networks, changes in technology requirements, timing of OEM customers’ product development and new product launches, changes in customer or patient preferences, and general demographic trends. Approximately 70% of our medical end market sales are related to surgical procedures, both elective and emergency based.

Advanced Industrial Market

For the year ended December 31, 2020, the advanced industrial market accounted for approximately 44% of our revenue. Revenue from our products sold to the advanced industrial market is affected by a number of factors, including changing technology requirements and preferences of our customers, productivity or quality investments in a manufacturing environment, the financial condition of our customers, changes in regulatory requirements and laws, and general economic conditions. We believe that the Purchasing Managers Index (PMI) on manufacturing activities specific to different regions around the world may provide an indication of the impact of general economic conditions on our sales into the advanced industrial market.

Strategy

Our strategy is to drive sustainable, profitable growth through short-term and long-term initiatives, including:

- disciplined focus on our diversified business model of providing functionality to long life-cycle OEM customer platforms in attractive medical and advanced industrial niche markets;
- improving our business mix to increase medical sales as a percentage of total revenue by:
 - introducing new products aimed at attractive medical applications, such as minimally invasive and robotic surgery, ophthalmology, patient monitoring, drug delivery, clinical laboratory testing and life science equipment;
 - deepening our key account management relationships with and driving cross selling of our product offerings to leading medical equipment manufacturers; and
 - pursuing complementary medical technology acquisitions;
- increasing our penetration of high growth advanced industrial applications, such as laser materials processing, robotics, laser additive manufacturing, automation and metrology, by working closely with OEM customers to launch application specific products that closely match the requirements of each application;
- broadening our portfolio of enabling proprietary technologies and capabilities through increased investment in new product development, and investments in application development to further penetrate existing customers, while expanding the applicability of our solutions to new markets;
- broadening our product and service offerings through the acquisition of innovative and complementary technologies and solutions in medical and advanced industrial technology applications, including increasing our recurring revenue streams such as services, spare parts and consumables;
- expanding sales and marketing channels to reach new target customers;
- improving our existing operations to expand profit margins and improve customer satisfaction by implementing lean manufacturing principles, strategic sourcing across our major production sites, and optimizing and limiting the growth of our fixed cost base; and
- attracting, retaining, and developing world-class talented and motivated employees.

Significant Events and Updates

Amendment to Third Amended and Restated Credit Agreement

On March 27, 2020, we entered into an amendment (the “First Amendment”) to the third amended and restated credit agreement, dated as of December 31, 2019 (as amended, the “Third Amended and Restated Credit Agreement”). Our Third Amended and Restated Credit Agreement provides for an aggregate credit facility of \$450.0 million, comprised of a \$100.0 million U.S. dollar equivalent euro-denominated (approximately €90.2 million) 5-year term loan facility and a \$350.0 million 5-year revolving credit facility (collectively, the “Senior Credit Facilities”). The First Amendment exercised a portion of the \$200 million uncommitted accordion feature under the Third Amended and Restated Credit Agreement and increased the revolving credit facility commitment by \$145 million, from \$350 million to \$495 million. Additionally, the uncommitted accordion feature was reset to \$200 million for potential future expansion.

Impact of COVID-19 on Our Business

Our Employees

In response to the COVID-19 pandemic, we have taken proactive, aggressive actions to protect the health and safety of our employees. We established steering committees at both the corporate level and at each of our facilities to provide leadership for and manage our COVID-19 risk mitigation actions and countermeasures. We have provided frequent employee communications that include guidance and updates to our employees with regards to COVID-19 safety procedures and status. We established rigorous safety measures in all of our facilities, including implementing social distancing protocols, requiring working from home for those employees that do not need to be physically present on the manufacturing floor or in our facilities to perform their work, suspending travel, spreading production over more shifts, implementing temperature checks at the entrances to our facilities, frequently disinfecting our workspaces, and providing masks to those employees who must be physically present in our facilities. We expect to continue these measures until we determine that the COVID-19 pandemic is adequately contained for purposes of our business. In connection with our COVID-19 remediation actions, we have incurred additional costs to protect the health of our employees, including investment in technologies and monitoring equipment. We expect such costs to continue to grow and be significant to our

cost of operations. We may take further actions as government authorities require or recommend or as we determine to be in the best interest of our employees.

We are committed to retaining and supporting our employees during this pandemic. To retain our employees, we issued to all of our employees, other than the Chief Executive Officer, the Chief Financial Officer, the Chief Human Resource Officer and the Chief Accounting Officer, a special one-time restricted stock unit grant in April 2020 at a total fair value of \$14.4 million in the aggregate. The restricted stock units vested in February 2021. These actions were implemented to create an ownership mindset and focus among all employees for the duration of the COVID-19 pandemic and through the expected recovery, while maintaining the Company's talent and capabilities.

Executive Compensation

The Compensation Committee of our Board of Directors approved the 2020 compensation plans for our executive officers and a Section 16 officer (collectively, the "Officers") in February 2020. To support our business during the COVID-19 pandemic, the Officers agreed to a reduction in cash compensation for 2020. Further, the Officers did not receive the special one-time restricted stock unit grant issued to the rest of the employees. In June 2020, our Board of Directors agreed to forgo the cash retainers payable to our non-employee directors for the third quarter of 2020.

Our Customers

The outbreak has significantly increased economic and demand uncertainty. The spread of COVID-19 has caused a global economic slowdown and a global recession. In 2020, the decline in customer demand in both medical and advanced industrial end markets resulted in a decrease in sales to many of our customers. In the event of a further prolonged economic recession, overall demand for our products could decline further in the near term and our business would be adversely affected to a greater extent.

Our Facilities

Because of the COVID-19 pandemic, governmental authorities worldwide implemented numerous evolving measures to try to contain the spread of the virus, such as travel bans and restrictions, limits on social gatherings, quarantines, shelter-in-place orders, business shutdowns and social distancing. We have important manufacturing operations in the U.S., the U.K., Germany, and China, all of which have been affected by the COVID-19 pandemic. As of December 31, 2020, our manufacturing facilities around the world were in operation. While governmental measures may be modified or extended in the event of a resurgence of COVID-19 infections, the spread of new variants of the virus, and delays in effective vaccination of a large proportion of the populations, we have taken measures to protect our employees and expect our manufacturing facilities to remain operational. In connection with the COVID-19 pandemic, we have experienced limited absenteeism from those employees who are required to be on site to perform their jobs.

Our Supply Chain

We have experienced limited disruption to our supply chain as a result of the COVID-19 pandemic to date. We regularly monitor the financial health and manufacturing output of companies in our supply chain. Hardship on our suppliers or sub-suppliers caused by the COVID-19 pandemic could cause further disruption in our ability to obtain raw materials or components required to manufacture our products, adversely affecting our operations. To mitigate the risk of any potential supply interruptions from the COVID-19 pandemic, we are identifying alternative suppliers, sourcing raw materials from different supplier locations, and taking other actions to ensure our supply of raw materials. Although we are mitigating potential supply interruptions from the COVID-19 pandemic, if certain suppliers cannot produce a key component for us, or if the receipt of certain materials is otherwise delayed, we may miss our scheduled shipment deadlines and our relationship with customers may be harmed. Additionally, restrictions on or disruptions of transportation, such as reduced availability of air transports, port closures and increased border controls or closures, have resulted in higher costs and delays, both for obtaining raw materials from suppliers and for shipping finished products to customers.

Our Liquidity

With respect to liquidity, we have taken actions to reduce costs and cash expenditures across the Company. These actions included reducing hiring activities, restricting travel, adjusting employee compensation by eliminating fiscal year 2020 cash bonuses and base salary increases, implementing an unpaid time-off program for substantially all of our non-production workforce, limiting discretionary spending, reducing or deferring spending on capital investment projects, deferring lease payments on certain facilities, and deferring certain U.S. payroll tax payments in accordance with relief provisions under the Coronavirus Aid, Relief, and Economic Security Act (the "CARES Act"). As of December 31, 2020, we deferred \$2.8 million in certain U.S. payroll tax payments under the CARES Act. Due to the uncertainty related to the future impact of the COVID-19 pandemic, we temporarily suspended repurchases under our share repurchase plans in April 2020.

As of December 31, 2020, we had cash and cash equivalents of \$125.1 million and available borrowing capacity under our revolving credit facility of \$395.2 million. We have reviewed numerous potential scenarios in connection with the impact of COVID-19 on our business. Based on our analysis, we believe our existing balances of cash and cash equivalents, anticipated cash flows from our operating activities, and available borrowing capacity under our revolving credit facility will be sufficient to meet our cash needs arising in the ordinary course of business for the next twelve months. Additionally, we believe we will remain in compliance with our debt covenants for the next twelve months.

Overview of Financial Results

Total revenue for 2020 was \$590.6 million, a decrease of \$35.5 million, or 5.7%, versus 2019. This decrease was primarily due to the COVID-19 pandemic as we experienced decreased demand in the advanced industrial market related to reductions in industrial manufacturing spending and in the medical market as a result of deferrals of elective surgical procedures. The effect of our acquisitions in 2019 resulted in an increase in revenue of \$8.4 million, or 1.3%. In addition, foreign exchange rates positively impacted our revenue by \$3.7 million, or 0.6%, in 2020.

Operating income increased \$0.6 million from \$55.3 million in 2019 to \$55.9 million in 2020. This increase was primarily attributable to a decrease of selling, general and administrative ("SG&A") expenses of \$8.6 million and a decrease in restructuring and acquisition related costs of \$12.8 million, offset by a decrease in gross profit of \$17.6 million as a result of lower revenue and an increase in research and development and engineering ("R&D") spending of \$5.0 million.

Basic earnings per common share ("basic EPS") of \$1.27 in 2020 increased \$0.11 from the basic EPS of \$1.16 in 2019. Diluted earnings per common share ("diluted EPS") of \$1.25 in 2020 increased \$0.10 from the diluted EPS of \$1.15 in 2019. The increase of basic EPS and diluted EPS was primarily attributable to decreases in interest expense and income tax provision.

Specific components of our operating results for 2020, 2019 and 2018 are further discussed below.

Results of Operations

The following table sets forth our results of operations as a percentage of revenue for the years indicated:

	2020	2019	2018
Revenue	100.0%	100.0%	100.0%
Cost of revenue	58.6	58.1	57.4
Gross profit	41.4	41.9	42.6
Operating expenses:			
Research and development and engineering	10.3	8.9	8.3
Selling, general and administrative	18.6	18.9	18.9
Amortization of purchased intangible assets	2.4	2.5	2.5
Restructuring and acquisition related costs	0.6	2.6	1.3
Total operating expenses	31.9	33.0	31.0
Operating income	9.5	8.8	11.6
Interest income (expense), net	(1.1)	(1.4)	(1.6)
Foreign exchange transaction gains (losses), net	(0.2)	(0.1)	0.0
Other income (expense), net	0.0	(0.0)	(0.0)
Income before income taxes	8.2	7.3	10.0
Income tax provision	0.7	0.8	1.7
Consolidated net income	7.5	6.5	8.3
Less: Net income attributable to noncontrolling interest	—	-	(0.3)
Net income attributable to Novanta Inc.	7.5%	6.5%	8.0%

Revenue

The following table sets forth external revenue by reportable segment for 2020, 2019 and 2018 (dollars in thousands):

	2020		2019		2018		% Change	
							2020 vs. 2019	2019 vs. 2018
Photonics	\$	199,613	\$	230,457	\$	249,339	(13.4)%	(7.6)%
Vision		261,650		271,407		232,902	(3.6)%	16.5%
Precision Motion		129,360		124,235		132,096	4.1%	(6.0)%
Total	\$	590,623	\$	626,099	\$	614,337	(5.7)%	1.9%

Photonics

Photonics segment revenue in 2020 decreased by \$30.8 million, or 13.4%, versus 2019, primarily due to decreased demand in the advanced industrial market related to reductions in global industrial manufacturing spending and in the medical market as a result of deferrals of elective surgical procedures and a reduction in certain medical diagnostic testing during the COVID-19 pandemic.

Photonics segment revenue in 2019 decreased by \$18.9 million, or 7.6%, versus 2018, primarily due to decreased demand in the advanced industrial market related to reductions in global industrial manufacturing spending, and a decrease in revenue from our optical light engine products, partially offset by \$4.9 million of revenue from the acquisition of ARGES in July 2019.

Vision

Vision segment revenue in 2020 decreased by \$9.8 million, or 3.6%, versus 2019, primarily due to a decrease in revenue from our minimally invasive surgery ("MIS") products as a result of deferrals of elective surgical procedures during the COVID-19 pandemic.

Vision segment revenue in 2019 increased by \$38.5 million, or 16.5%, versus 2018. The increase was primarily due to an increase in revenue of \$28.4 million from our minimally invasive surgery products as a result of new product introductions and increased demand in the medical market and \$5.4 million of revenue from the acquisition of Med X Change in June 2019.

Precision Motion

Precision Motion segment revenue in 2020 increased by \$5.1 million, or 4.1%, versus 2019, primarily due to an increase in revenue related to increased demand by microelectronics customers, partially offset by decreased demand in the medical market as a result of deferrals of elective surgical procedures during the COVID-19 pandemic.

Precision Motion segment revenue in 2019 decreased by \$7.9 million, or 6.0%, versus 2018. The decrease was primarily due to decreased demand in the microelectronics and industrial market related to reductions in global industrial manufacturing spending, partially offset by increased demand in the medical market and the acquisitions of Ingenia in April 2019 and Zettlex Holdings Limited ("Zettlex") in May 2018.

Gross Profit

The following table sets forth the gross profit and gross profit margin for each of our reportable segments for 2020, 2019 and 2018 (dollars in thousands):

	2020	2019	2018
Gross profit:			
Photonics	\$ 89,060	\$ 105,845	\$ 117,109
Vision	100,267	105,228	87,198
Precision Motion	58,279	53,326	59,477
Unallocated Corporate and Shared Services	(3,089)	(2,314)	(2,256)
Total	\$ 244,517	\$ 262,085	\$ 261,528
Gross profit margin:			
Photonics	44.6%	45.9%	47.0%
Vision	38.3%	38.8%	37.4%
Precision Motion	45.1%	42.9%	45.0%
Total	41.4%	41.9%	42.6%

Gross profit and gross profit margin can be influenced by a number of factors, including product mix, pricing, volume, manufacturing efficiencies and utilization, costs for raw materials and outsourced manufacturing, headcount, inventory obsolescence and warranty expenses.

Photonics

Photonics segment gross profit for 2020 decreased \$16.8 million, or 15.9%, versus 2019, primarily due to a decrease in revenue. Photonics segment gross profit margin was 44.6% for 2020, compared with a gross profit margin of 45.9% for 2019. The decrease in gross profit margin was primarily attributable to lower factory utilization associated with lower production volumes and higher costs as a result of the COVID-19 pandemic.

Photonics segment gross profit for 2019 decreased \$11.3 million, or 9.6%, versus 2018, primarily due to a decrease in revenue. Photonics segment gross profit margin was 45.9% for 2019, compared with a gross profit margin of 47.0% for 2018. The decrease in gross profit margin was primarily attributable to changes in product mix. Amortization of inventory fair value adjustments and amortization of developed technologies increased \$1.1 million, which resulted in a 0.5 percentage point decrease in gross profit margin.

Vision

Vision segment gross profit for 2020 decreased \$5.0 million, or 4.7%, versus 2019, primarily due to a decrease in revenue. Vision segment gross profit margin was 38.3% for 2020, compared with a gross profit margin of 38.8% for 2019. The decrease in gross profit margin was primarily attributable to unfavorable product mix changes as a result of the COVID-19 pandemic.

Vision segment gross profit for 2019 increased \$18.0 million, or 20.7%, versus 2018, primarily due to an increase in revenue. Vision segment gross profit margin was 38.8% for 2019, compared with a gross profit margin of 37.4% for 2018. The increase in gross profit margin was primarily attributable to increased utilization of our German facility and cost reductions in our optical data collection products, partially offset by the cost of a redundant manufacturing facility in San Jose, California until the transfer of our manufacturing activities was substantially completed at the end of 2019.

Precision Motion

Precision Motion segment gross profit for 2020 increased \$5.0 million, or 9.3%, versus 2019, primarily due to an increase in revenue. Precision Motion segment gross profit margin was 45.1% for 2020, compared with a gross profit margin of 42.9% for 2019. The increase in gross profit margin was primarily attributable to favorable product and customer mix changes as well as productivity improvements implemented during 2020.

Precision Motion segment gross profit for 2019 decreased \$6.2 million, or 10.3%, versus 2018, primarily due to a decrease in revenue and a decrease in gross profit margin. Precision Motion segment gross profit margin was 42.9% for 2019, compared with a gross profit margin of 45.0% for 2018. The decrease in gross profit margin was primarily attributable to business volume reductions that could not be fully compensated by cost reduction initiatives.

Operating Expenses

The following table sets forth operating expenses for 2020, 2019 and 2018 (dollars in thousands):

	2020	2019	2018	% Change	
				2020 vs. 2019	2019 vs. 2018
Research and development and engineering	\$ 60,996	\$ 55,965	\$ 51,024	9.0%	9.7%
Selling, general and administrative	109,853	118,407	115,900	(7.2)%	2.2%
Amortization of purchased intangible assets	13,970	15,857	15,550	(11.9)%	2.0%
Restructuring and acquisition related costs	3,810	16,574	8,041	(77.0)%	106.1%
Total	\$ 188,629	\$ 206,803	\$ 190,515	(8.8)%	8.5%

Research and Development and Engineering Expenses

Research and development and engineering ("R&D") expenses are primarily comprised of employee compensation and related expenses and cost of materials for R&D projects.

R&D expenses were \$61.0 million, or 10.3% of revenue in 2020, versus \$56.0 million, or 8.9% of revenue in 2019. R&D expenses increased in terms of total dollars and as a percentage of revenue primarily due to R&D expenses added from 2019 acquisitions, higher R&D project spending and higher share-based compensation expense offset by lower cash compensation and a reduction in discretionary spending.

R&D expenses were \$56.0 million, or 8.9% of revenue in 2019, versus \$51.0 million, or 8.3% of revenue in 2018. R&D expenses increased in terms of total dollars and as a percentage of revenue primarily due to R&D expenses added from acquisitions and higher investments in R&D.

Selling, General and Administrative Expenses

Selling, general and administrative ("SG&A") expenses include costs for sales and marketing, sales administration, finance, human resources, legal, information systems and executive management.

SG&A expenses were \$109.9 million, or 18.6% of revenue, in 2020, versus \$118.4 million, or 18.9% of revenue in 2019. SG&A expenses decreased in terms of total dollars and as a percentage of revenue primarily due to lower cash compensation and lower discretionary spending, partially offset by higher share-based compensation expense.

SG&A expenses were \$118.4 million, or 18.9% of revenue in 2019, versus \$115.9 million, or 18.9% of revenue in 2018. SG&A expenses increased in terms of total dollars primarily due to SG&A expenses added from acquisitions and higher professional services spending, partially offset by lower variable compensation expense.

Amortization of Purchased Intangible Assets

Amortization of purchased intangible assets is charged to our Photonics, Vision and Precision Motion segments. Amortization of developed technologies is included in cost of revenue in the consolidated statement of operations. Amortization of customer relationships, trademarks, trade names, backlog and other intangibles are included in operating expenses in the consolidated statement of operations.

Amortization of purchased intangible assets, excluding the amortization of developed technologies that is included in cost of revenue, was \$14.0 million, or 2.4% of revenue in 2020, versus \$15.9 million, or 2.5% of revenue in 2019. The decrease in terms of total dollars was the result of certain acquired intangible assets being fully amortized at the end of 2019.

Amortization of purchased intangible assets, excluding the amortization of developed technologies that is included in cost of revenue, was \$15.9 million, or 2.5% of revenue, in 2019, versus \$15.6 million, or 2.5% of revenue in 2018. The increase in terms of total dollars was the result of acquired intangible assets from acquisitions in 2018 and 2019.

Restructuring and Acquisition Related Costs

Restructuring and acquisition related charges primarily relate to our restructuring programs, acquisition related costs incurred for completed acquisitions, acquisition costs related to future potential acquisitions and failed acquisitions, and changes in fair value of contingent considerations.

We recorded restructuring and acquisition related costs of \$3.8 million in 2020, versus \$16.6 million in 2019. The decrease in restructuring and acquisition related costs versus 2019 was primarily due to a decrease in restructuring charges of \$4.2 million and a decrease in acquisition and related costs of \$8.6 million. The decrease in acquisition and related costs was primarily attributable to the reduction in fair value of the contingent considerations in 2020 related to 2019 acquisitions and higher professional services fees for acquisitions during 2019, offset by legal fees during 2020 related to a dispute involving a company we acquired in 2019.

We recorded restructuring and acquisition related costs of \$16.6 million in 2019, versus \$8.0 million in 2018. The increase in restructuring and acquisition related costs in 2019 versus 2018 was primarily due to an increase in restructuring charges of \$6.6 million as a result of the 2018 and 2019 restructuring programs and an increase in acquisition related costs of \$1.9 million primarily related to an increase in professional services fees, partially offset by a decrease in costs recognized under earn-out agreements.

Operating Income (Loss) by Segment

The following table sets forth operating income (loss) by segment for 2020, 2019 and 2018 (in thousands):

	2020	2019	2018
Operating Income (Loss)			
Photonics	\$ 34,001	\$ 41,990	\$ 59,285
Vision	16,354	21,007	8,991
Precision Motion	31,663	22,339	31,674
Unallocated Corporate and Shared Services	(26,130)	(30,054)	(28,937)
Total	\$ 55,888	\$ 55,282	\$ 71,013

Photonics

Photonics segment operating income was \$34.0 million, or 17.0% of revenue, in 2020, versus \$42.0 million, or 18.2% of revenue, in 2019. The decrease in operating income was primarily due to a decrease in gross profit of \$16.8 million and an increase in R&D spending of \$2.5 million, partially offset by a decrease in SG&A expense of \$1.9 million, a decrease in restructuring and acquisition related charges of \$7.1 million, and a decrease in amortization of purchased intangible assets of \$2.3 million.

Photonics segment operating income was \$42.0 million, or 18.2% of revenue, in 2019, versus \$59.3 million, or 23.8% of revenue, in 2018. The decrease in operating income was primarily due to a decrease in gross profit of \$11.3 million, an increase in R&D expenses of \$2.1 million and restructuring related charges of \$5.0 million associated with the 2019 restructuring program, including a \$2.2 million impairment of an operating lease right-of-use asset.

Vision

Vision segment operating income was \$16.4 million, or 6.3% of revenue, in 2020, versus \$21.0 million, or 7.7% of revenue, in 2019. The decrease in operating income was primarily due to a decrease in gross profit of \$5.0 million, an increase in R&D spending of \$2.6 million, and an increase in restructuring and acquisition related charges of \$1.6 million, partially offset by a decrease of SG&A expenses of \$4.8 million.

Vision segment operating income was \$21.0 million, or 7.7% of revenue, in 2019, versus \$9.0 million, or 3.9% of revenue, in 2018. The increase in operating income was primarily due to an increase in gross profit of \$18.0 million, partially offset by an increase in R&D expenses of \$1.6 million and SG&A expenses of \$2.8 million. Vision segment operating income was negatively affected by a \$0.9 million net increase in amortization of inventory fair value adjustments and amortization of intangible assets.

Precision Motion

Precision Motion segment operating income was \$31.7 million, or 24.5% of revenue, in 2020, versus \$22.3 million, or 18.0% of revenue, in 2019. The increase in operating income was primarily due to an increase in gross profit of \$5.0 million, a decrease in SG&A expenses of \$1.5 million, and a decrease in restructuring and acquisition related charges of \$2.9 million.

Precision Motion segment operating income was \$22.3 million, or 18.0% of revenue, in 2019, versus \$31.7 million, or 24.0% of revenue, in 2018. The decrease in operating income was primarily due to a decrease in gross profit of \$6.2 million, an increase in R&D expenses of \$1.3 million and SG&A expenses of \$2.8 million, partially offset by a decrease in acquisition related earn-out costs of \$1.8 million associated with the Zettlex acquisition.

Unallocated Corporate and Shared Services

Unallocated corporate and shared services costs primarily represent costs of corporate and shared SG&A functions and other public company costs that are not allocated to the operating segments, including certain restructuring and most acquisition related costs.

Unallocated corporate and shared services costs for 2020 decreased by \$3.9 million, or 13.1%, from 2019, primarily due to a decrease in restructuring and acquisition related costs of \$4.4 million.

Unallocated corporate and shared services costs for 2019 increased by \$1.1 million, or 3.9%, from 2018, primarily due to an increase in restructuring and acquisition related costs of \$3.8 million, partially offset by a decrease in SG&A expenses of \$2.6 million primarily related to lower variable compensation expense.

Interest Income (Expense), Foreign Exchange Transaction Gains (Losses), and Other Income (Expense), Net

The following table sets forth interest income (expense), foreign exchange transaction gains (losses), and other income (expense) for 2020, 2019 and 2018 (in thousands):

	2020	2019	2018
Interest income (expense), net	\$ (6,564)	\$ (8,493)	\$ (9,814)
Foreign exchange transaction gains (losses), net	(942)	(780)	147
Other income (expense), net	21	(243)	(44)

Interest Income (Expense), Net

Net interest expense was \$6.6 million in 2020 versus \$8.5 million in 2019. The decrease in net interest expense was primarily due to a decrease in average debt levels and a decrease in the weighted average interest rate on our senior credit facilities. The weighted average interest rate on our senior credit facilities was 2.32% and 3.30% during 2020 and 2019, respectively. Included in net interest expense was non-cash interest expense of approximately \$1.0 million and \$1.1 million in 2020 and 2019, respectively, related to the amortization of deferred financing costs on our debt.

Net interest expense was \$8.5 million in 2019 versus \$9.8 million in 2018. The decrease in net interest expense was primarily due to a decrease in average debt levels and a decrease in the weighted average interest rate on our senior credit facilities. The weighted average interest rate on our senior credit facilities was 3.30% and 3.53% during 2019 and 2018, respectively. Included in net interest expense was non-cash interest expense of approximately \$1.1 million and \$1.0 million in 2019 and 2018, respectively, related to the amortization of deferred financing costs on our debt.

Foreign Exchange Transaction Gains (Losses), Net

Foreign exchange transaction gains (losses), net, were \$0.9 million net losses in 2020 versus \$0.8 million net losses in 2019 primarily due to changes in the value of the U.S. Dollar against the British Pound and the Euro and net realized gains from foreign currency contracts.

Foreign exchange transaction gains (losses), net, were \$0.8 million net losses in 2019 versus \$0.1 million net gains in 2018 primarily due to changes in the value of the U.S. Dollar against the British Pound and the Euro, and net realized gains from foreign currency contracts.

Other Income (Expense), Net

Net other expense was nominal in 2020, 2019 and 2018, respectively.

Income Tax Provision

We recorded a tax provision of \$3.9 million in 2020, compared to a tax provision of \$5.0 million in 2019. The effective tax rate for 2020 was 8.0% of income before income taxes, compared to an effective tax rate of 10.9% of income before income taxes for 2019. Our effective tax rate for 2020 differed from the Canadian statutory rate of 29.0% primarily due to the mix of income earned in jurisdictions with varying tax rates, \$1.3 million benefit from U.K. patent box deductions, \$2.3 million benefit from share-based compensation, \$0.7 million reversal of valuation allowance recorded on net operating losses and other timing items in certain tax jurisdictions due to current and forecasted taxable income, \$2.0 million of R&D and other tax credits, \$1.1 million of estimated deductions for foreign derived intangible income, and \$1.5 million benefit from the reduction in fair value of non-deductible

acquisition contingent consideration liabilities, offset by miscellaneous other items such as foreign withholding taxes and impact of changes in statutory tax rates on our deferred tax attributes.

We recorded a tax provision of \$5.0 million in 2019, compared to a tax provision of \$10.2 million in 2018. The effective tax rate for 2019 was 10.9% of income before income taxes, compared to an effective tax rate of 16.7% of income before income taxes for 2018. Our effective tax rate for 2019 differed from the Canadian statutory rate of 29.0% primarily due to the mix of income earned in jurisdictions with varying tax rates, a \$2.0 million benefit from U.K. patent box deductions, a \$1.7 million benefit from share-based compensation, \$1.5 million of other tax credits, and \$0.8 million of estimated deductions for foreign derived intangible income; offset by \$0.3 million of non-deductible expenses recognized under earn-out agreements in connection with various acquisitions and \$0.2 million of non-deductible acquisition costs.

On March 27, 2020, the U.S. federal government enacted the CARES Act in response to the COVID-19 pandemic. The CARES Act is an emergency economic stimulus package which, among other things, contains numerous provisions concerning income taxes. The CARES Act will not have a material impact on our income taxes or related disclosures.

Liquidity and Capital Resources

We assess our liquidity in terms of our ability to generate cash to fund our operating, investing, and financing activities. Our primary ongoing cash requirements are funding operations, capital expenditures, investments in businesses, and repayment of our debt and related interest payments. Our primary sources of liquidity are cash flows from operations and borrowings under our revolving credit facility. We believe our future operating cash flows will be sufficient to meet our future operating and capital expenditure cash needs for the foreseeable future, including at least the next 12 months. The availability of borrowing capacity under our revolving credit facility provides another potential source of liquidity for acquisitions. We may seek to raise additional capital, which could be in the form of bonds, convertible debt or equity, to fund business development activities or other future investing cash requirements, subject to approval by the lenders in the Third Amended and Restated Credit Agreement.

Significant factors affecting the management of our ongoing cash requirements are the adequacy of available bank lines of credit and our ability to attract long term capital with satisfactory terms. The sources of our liquidity are subject to all of the risks of our business and could be adversely affected by, among other factors, risks associated with events outside of our control, such as economic consequences of the COVID-19 pandemic, a decrease in demand for our products, our ability to integrate current and future acquisitions, deterioration in certain financial ratios, availability of borrowings under our revolving credit facility, and market changes in general. See "Risks Relating to Our Common Shares and Our Capital Structure" included in Item 1A of this Annual Report on Form 10-K.

Our ability to make payments on our indebtedness and to fund our operations may be dependent upon the earnings and the distribution of funds from our subsidiaries. Local laws and regulations and/or the terms of our indebtedness restrict certain of our subsidiaries from paying dividends and transferring assets to us. There is no assurance that applicable laws and regulations and/or the terms of our indebtedness will permit our subsidiaries to provide us with sufficient dividends, distributions or loans when necessary.

As of December 31, 2020, \$92.1 million of our \$125.1 million cash and cash equivalents was held by our subsidiaries outside of Canada and the United States. Generally, our intent is to use cash held in these foreign subsidiaries to fund our local operations or acquisitions by those local subsidiaries and to pay down borrowings under our senior credit facilities. Approximately \$185.8 million of our outstanding borrowings under our senior credit facilities were held in our subsidiaries outside of Canada and the United States. Additionally, we may use intercompany loans to address short-term cash flow needs for various subsidiaries.

We are deferring certain U.S. payroll tax payments in 2020 in accordance with relief provisions under the CARES Act. As of December 31, 2020, we deferred \$2.8 million in certain U.S. payroll tax payments under the CARES Act. As permitted under the CARES Act, we expect to pay half of the deferred U.S. payroll taxes by December 31, 2021 and the remaining half by December 31, 2022.

In addition, with respect to the COVID-19 pandemic impact on liquidity, we have taken actions to reduce costs and cash expenditures across the Company. These included reducing hiring activities, restricting travel, adjusting employee compensation by eliminating fiscal year 2020 cash bonuses and base salary increases, implementing an unpaid time-off program for substantially all of our non-production workforce, limiting discretionary spending, reducing or deferring spending on capital investment projects, and deferring lease payments on certain facilities.

Share Repurchase Plans

Our Board of Directors may approve share repurchase plans from time to time. Under these repurchase plans, shares may be repurchased at our discretion based on ongoing assessment of the capital needs of the business, the market price of our common shares, and general market conditions. Shares may also be repurchased through an accelerated share purchase agreement, on the open market or in privately negotiated transactions in accordance with applicable federal securities laws. Repurchases may be made under certain SEC regulations, which would permit common shares to be repurchased when we would otherwise be prohibited from doing so under insider trading laws. While the share repurchase plans are generally intended to offset dilution from equity awards granted to our employees and directors, the plans do not obligate us to acquire any particular amount of common shares. No time limit is typically set for the completion of the share repurchase plans, and the plans may be suspended or discontinued at any time. We expect to fund share repurchases through cash on hand and cash generated from operations.

In October 2018, our Board of Directors approved a share repurchase plan (the “2018 Repurchase Plan”) authorizing the repurchase of \$25.0 million worth of common shares. Share repurchases have been made under the 2018 Repurchase Plan pursuant to Rule 10b-18 under the Securities Exchange Act of 1934. During 2020, we repurchased 65 thousand shares for an aggregate purchase price of \$5.5 million at an average price of \$84.52 per share under the 2018 Repurchase Plan. We had \$9.5 million available for share repurchases under the 2018 Repurchase Plan as of December 31, 2020.

In February 2020, our Board of Directors approved a new share repurchase plan (the “2020 Repurchase Plan”) authorizing the repurchase of an additional \$50.0 million worth of common shares. We expect that share repurchases will be made under the 2020 Repurchase Plan pursuant to Rule 10b-18 under the Securities Exchange Act of 1934 after the 2018 Repurchase Plan is completed.

In an effort to preserve cash in light of the economic slowdown caused by the COVID-19 pandemic, we have temporarily suspended repurchases under our share repurchase plans since April 2020.

Senior Credit Facilities

In December 2019, we entered into the Third Amended and Restated Credit Agreement, originally consisting of a \$100.0 million U.S. dollar equivalent euro-denominated (approximately €90.2 million) 5-year term loan facility and a \$350.0 million 5-year revolving credit facility (collectively, the “Senior Credit Facilities”). The Senior Credit Facilities mature in December 2024. The term loan facility requires quarterly scheduled principal repayments of approximately €1.1 million beginning in March 2020 with the remaining principal balance due upon maturity. We may make additional principal payments at any time, which will reduce the next quarterly installment payment due. We may make payments to pay down our revolving credit facility with cash on hand and cash generated from future operations at anytime until maturity.

On March 27, 2020, we entered into the First Amendment to the Third Amended and Restated Credit Agreement and exercised a portion of the uncommitted accordion feature. The First Amendment increased the revolving credit facility commitment under the Third Amended and Restated Credit Agreement by \$145.0 million, from \$350.0 million to \$495.0 million, and reset the uncommitted accordion feature to \$200.0 million for potential future expansion.

On June 2, 2020, we entered into the Second Amendment to the Third Amended and Restated Credit Agreement. The Second Amendment revised our consolidated leverage ratio definition (as defined in the Third amended and Restated Credit Agreement) allowing for the use of up to \$25 million unrestricted cash and cash equivalents as a reduction to consolidated funded indebtedness (as defined in the Third amended and Restated Credit Agreement).

As of December 31, 2020, we had \$105.1 (€85.7) million term loan and \$99.8 million revolver borrowings outstanding under our Senior Credit Facilities. The borrowings outstanding under the Senior Credit Facilities bear interest at rates based on (a) the Base Rate, as defined in the Third Amended and Restated Credit Agreement, plus a margin ranging between 0.25% to 1.25% per annum, determined by reference to our consolidated leverage ratio, or (b) the Eurocurrency Rate, as defined in the Third Amended and Restated Credit Agreement, plus a margin ranging between 1.25% and 2.25% per annum, determined by reference to our consolidated leverage ratio. In addition, we are obligated to pay a commitment fee on the unused portion of the revolving credit facility, ranging between 0.20% and 0.40% per annum, determined by reference to our consolidated leverage ratio. As of December 31, 2020, we had outstanding borrowings under the Third Amended and Restated Credit Agreement denominated in Euro and U.S. Dollars of \$185.8 million and \$19.0 million, respectively.

The Third Amended and Restated Credit Agreement contains various covenants that, we believe, are usual and customary for this type of agreement, including a maximum allowed leverage ratio and a minimum required fixed charge coverage ratio (as defined in the Third Amended and Restated Credit Agreement). The following table summarizes these financial covenants and our compliance therewith as of December 31, 2020:

	Requirement	Actual December 31, 2020
Maximum consolidated leverage ratio	3.50	1.49
Minimum consolidated fixed charge coverage ratio	1.50	10.57

In addition, the Third Amended and Restated Credit Agreement contains various other customary representations, warranties and covenants applicable to the Company and its subsidiaries, including: (i) limitations on certain payments; (ii) limitations on fundamental changes involving the Company; (iii) limitations on the disposition of assets; and (iv) limitations on indebtedness, investments, and liens.

Cash Flows

Cash and cash equivalents totaled \$125.1 million at December 31, 2020, versus \$78.9 million at December 31, 2019. The net increase in cash and cash equivalents is primarily attributable to cash provided by operating activities of \$140.2 million offset by \$35.4 million debt repayments, \$31.0 million of payments of deferred and escrowed purchase price related to prior year acquisitions, \$10.5 million capital expenditures, \$8.6 million of payroll tax payments upon vesting of share-based compensation awards, and \$5.5 million of repurchases of common shares.

The following table summarizes our cash and cash equivalent balances, cash flows and unused borrowing capacity available under our revolving credit facility for the years indicated (in thousands):

	2020	2019	2018
Cash and cash equivalents, end of year	\$ 125,054	\$ 78,944	\$ 82,043
Net cash provided by operating activities	\$ 140,239	\$ 63,248	\$ 89,647
Net cash used in investing activities	\$ (13,156)	\$ (63,844)	\$ (45,590)
Net cash provided by (used in) financing activities	\$ (84,357)	\$ (3,935)	\$ (60,164)
Unused borrowing capacity available under revolving credit facility, end of year	\$ 395,239	\$ 226,616	\$ 189,942

Operating Cash Flows

Cash provided by operating activities was \$140.2 million in 2020, versus \$63.2 million in 2019. Cash provided by operating activities increased from the prior year primarily due to working capital improvements resulting in an increase in cash inflows from reductions in accounts receivable and inventory balances, and a decrease in income tax payments.

Cash provided by operating activities for 2020 was positively impacted by an increase in our inventory turnover ratio from 3.1 at December 31, 2019 to 3.7 at December 31, 2020 and a decrease in accounts receivable, offset by a decrease in our days payables outstanding which decreased from 53 days at December 31, 2019 to 45 days at December 31, 2020. During 2020, we paid the 2019 annual employee bonuses which had been accrued for as of December 31, 2019.

Cash provided by operating activities for 2019 was negatively impacted by an increase in our days sales outstanding which increased from 51 days at December 31, 2018 to 54 days at December 31, 2019 primarily due to poor sales linearity, a decrease in our outstanding payables and accrued expenses, excluding payables and accrued expenses assumed from acquisitions in 2019, and an increase in inventories. Our inventory turnover ratio decreased from 3.4 at December 31, 2018 to 3.1 at December 31, 2019.

Cash provided by operating activities for 2018 was positively impacted by an increase in our days payables outstanding and an increase in accrued expenses. The Company's growth in revenue of \$93.0 million and gross profit of \$41.0 million increased our outstanding trade receivables and inventories, which negatively impacted our cash provided by operating activities.

Investing Cash Flows

Cash used in investing activities was \$13.2 million during 2020, primarily driven by capital expenditures of \$10.5 million and a payment for intangible assets of \$2.6 million related to our 2016 asset acquisition of video signal processing and management technologies.

Cash used in investing activities was \$63.8 million during 2019, primarily related to \$53.1 million in cash outflows (net of cash acquired of \$4.2 million) related to 2019 acquisitions. We also paid \$10.7 million for capital expenditures during 2019.

Cash used in investing activities was \$45.6 million during 2018, primarily related to \$29.6 million in cash outflows (net of cash acquired of \$3.8 million) related to acquisitions in 2018 and \$14.7 million for capital expenditures.

We have no material commitments to purchase property, plant and equipment as of December 31, 2020. We expect to use approximately \$21 million to \$23 million in 2021 for capital expenditures related to investments in new property, plant and equipment for our existing businesses.

Financing Cash Flows

Cash used in financing activities was \$84.4 million during 2020, primarily due to \$35.4 million in repayments of borrowings under our Senior Credit Facilities, \$31.0 million payments of deferred and escrowed purchase price related to prior year acquisitions, \$8.6 million of payroll tax payments upon vesting of share-based compensation awards, \$5.5 million of repurchases of common shares, and \$1.6 million of fees paid in connection with the First Amendment to our Third Amended and Restated Credit Agreement.

Cash used in financing activities was \$3.9 million during 2019, primarily due to \$50.7 million repayment of term loan and revolving credit facility borrowings, \$6.9 million of payroll tax payments on share-based compensation awards, and \$10.0 million of repurchases of common shares, partially offset by \$66.8 million of borrowings under our revolving credit facility used to fund cash considerations paid for 2019 acquisitions. We also paid \$2.7 million for debt issuance costs as a result of the Third Amended and Restated Credit Agreement entered into in December 2019.

Cash used in financing activities was \$60.2 million during 2018, primarily due to \$30.8 million of cash consideration paid for the acquisition of the remaining equity interest in Laser Quantum Limited ("Laser Quantum"), \$9.2 million of contractual term loan payments, \$65.4 million of optional repayments of borrowings under our revolving credit facility, \$3.6 million of payroll tax payments on share-based compensation awards, and \$5.9 million of repurchases of common shares, partially offset by \$55.3 million of borrowings under our revolving credit facility used to fund a portion of the cash consideration paid for the acquisition of Zettlex Holdings Limited and the remaining equity interest in Laser Quantum.

In 2021, we are contractually required to pay \$5.5 million in repayments under our term loan facility and \$0.9 million in principal payments under our finance lease obligations. We exercised an option in December 2020 to purchase a facility for \$9.2 million in Germany and expect to pay the related cash proceeds in March 2021. In addition, we may make optional repayments under our term loan and revolving credit facility from time to time with available cash generated from future operating activities.

Pension Plans

We maintain a defined benefit pension plan (the "U.K. Plan") in Novanta Technologies UK Limited, a wholly owned subsidiary of the Company. Our U.K. Plan was closed to new members in 1997 and stopped accruing additional pension benefits for existing members in 2003, thereby limiting our obligation to benefits earned through that date. Benefits under this plan were based on the employees' years of service and compensation as of the date the plan was frozen, adjusted for inflation. On July 1, 2013, the Company provided a Guarantee (the "Guarantee") in favor of the trustees of the U.K. Plan with respect to all present and future obligations and liabilities (whether actual or contingent and whether owed jointly or severally and in any capacity whatsoever) under the U.K. Plan.

Our funding policy is to fund the U.K. Plan based on actuarial methods as permitted by the Pensions Regulator in the U.K. The results of funding valuations depend on both the funding deficit and the assumptions used (such as asset returns, discount rates, mortality, retail price inflation and other market driven assumptions). Each assumption used represents one estimate of many possible future outcomes. The final cost to us will be determined by events as they actually become known, including actual return on plan assets and pension payments to plan participants. As of December 31, 2020, the projected benefit obligation under the U.K. Plan exceeded the fair value of plan assets by \$1.5 million. Based on the results of the most recent funding valuation, our annual contributions are expected to be approximately \$1.0 million in 2021 and will increase by 2.9% per year thereafter.

Off-Balance Sheet Arrangements, Contractual Obligations

Contractual Obligations

The following table summarizes our contractual obligations at December 31, 2020 and the effect that such obligations are expected to have on our liquidity and cash flows in future years. We have excluded the future cash payments for unrecognized tax benefits of \$5.1 million, including interest and penalties, because we are uncertain if and when such amounts may be settled. These

unrecognized tax benefits are further explained in Note 15 to our Consolidated Financial Statements included in Item 8 of this Annual Report on Form 10-K.

Contractual Obligations	Total	2021	2022 - 2023	2024 - 2025	Thereafter
			(In thousands)		
Senior Credit Facilities (1)	\$ 204,840	\$ 5,545	\$ 11,090	\$ 188,205	\$ —
Interest on Senior Credit Facilities (2)	15,389	4,050	7,851	3,488	—
Finance leases (3)	17,292	10,060	1,837	1,908	3,487
Operating leases (4)	51,673	7,297	12,719	9,620	22,037
Purchase commitments (5)	54,568	54,416	152	—	—
U.K. pension plan (6)	1,511	1,013	498	—	—
Contingent considerations and earn-outs (7)	18,072	10,796	4,086	2,412	778
Total contractual obligations	<u>\$ 363,345</u>	<u>\$ 93,177</u>	<u>\$ 38,233</u>	<u>\$ 205,633</u>	<u>\$ 26,302</u>

- (1) As of December 31, 2020, a total of \$105.1 million term loan and \$99.8 million revolving credit facility were outstanding under the Senior Credit Facilities. The term loan is payable in quarterly installments of approximately €1.1 million (\$1.4 million) with the final installment of €68.7 million (\$84.3 million) due upon maturity in December 2024. Borrowings under the revolving credit facility are due at maturity in December 2024.
- (2) For the purpose of this presentation, current interest rates on floating rate obligations (LIBOR plus applicable margin, as defined in the Third Amended and Restated Credit Agreement) were used for the remainder contractual life of both the term loan and outstanding borrowings under the revolving credit facility. Current commitment fee rate was used for the unused commitments under the revolving credit facility as of December 31, 2020.
- (3) Future minimum lease payments under finance leases include the exercise price of an option to purchase a facility for \$9.2 million in Germany in 2021. The Company exercised the option in December 2020 and expects to pay the related cash proceeds in March 2021.
- (4) These amounts primarily represent the gross amounts due for leased facilities. The amounts include payments due with respect to both active operating facilities and idle facilities that have been vacated.
- (5) Purchase commitments represent purchase obligations as of December 31, 2020.
- (6) Amounts shown represent expected funding contributions to reach an actuarial funded status where the market value of plan assets equals the projected benefit obligations as reported on the Company's consolidated balance sheet as of December 31, 2020. The Company expects to continue its annual funding contributions thereafter, increasing 2.9% annually through 2022, until the value of plan assets is sufficient to settle the benefit obligations under the U.K. Plan in full.
- (7) These amounts represent the estimated contingent consideration and earn-out payments accrued in the consolidated balance sheet as of December 31, 2020 that are expected to be paid between 2021 and 2027. The undiscounted range of the possible contingent consideration and earn-out payments is \$2.7 million to \$32.9 million.

Off-Balance Sheet Arrangements

Through December 31, 2020, we have not entered into any off-balance sheet arrangements or material transactions with unconsolidated entities or other persons.

Critical Accounting Policies and Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the U.S. requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities as of the dates of the financial statements and the reported amounts of revenues and expenses for the reporting periods. On an ongoing basis, we evaluate our estimates, assumptions and judgments, including those related to revenue recognition, inventory valuation, impairment assessment and valuation of goodwill, intangible assets and tangible long-lived assets, valuation of contingent consideration obligations, accounting for income taxes, and accounting for loss contingencies. Actual results in the future could differ significantly from our estimates.

We believe that the following critical accounting policies and estimates most significantly affect the portrayal of our financial condition and results of operations and require the most difficult and subjective judgments.

Revenue Recognition. Beginning January 1, 2018, we adopted Accounting Standards Update ("ASU") 2014-09, "Revenue from Contracts with Customers" ("ASU 2014-09" or "Topic 606") using the modified retrospective method. Under Topic 606, an entity

recognizes revenue when its customer obtains control of promised goods or services, in an amount that reflects the consideration which the entity expects to receive in exchange for those goods or services. Revenue recognition for arrangements within the scope of Topic 606 includes the following five steps: (i) identifying the contract(s) with a customer; (ii) identifying the performance obligations in the contract; (iii) determining the transaction price; (iv) allocating the transaction price to the performance obligations in the contract; and (v) recognizing revenue when (or as) a performance obligation is satisfied.

We recognize revenue when control of promised goods or services is transferred to customers. This generally occurs upon shipment when the title and risk of loss pass to the customer. The vast majority of our revenue is generated from the sale of distinct products. Revenue is measured as the amount of consideration we expect to receive in exchange for such products, which is generally at contractually stated prices. Sales taxes and value added taxes collected concurrently with revenue generating activities are excluded from revenue.

Substantially all of our revenue is recognized at a point in time, upon shipment, rather than over time. At the request of our customers, we may perform professional services, generally for the maintenance and repair of products previously sold to those customers and for engineering services. Professional services are typically short in duration, mostly less than one month, and total less than 3% of our consolidated revenue. Revenue is typically recognized at a point in time when control transfers to the customer upon completion of professional services. These services generally involve a single distinct performance obligation. The consideration expected to be received in exchange for such services is normally the contractually stated amount.

We occasionally sell separately priced non-standard/extended warranty services or preventative maintenance plans with the sale of products. The transfer of control over the service plans is over time. We recognize the related revenue ratably over the terms of the service plans. The transaction price of a contract is allocated to each performance obligation based on its relative standalone selling price. Standalone selling prices are generally determined based on the prices charged to customers or using the expected cost plus a margin.

We account for shipping and handling activities that occur after the transfer of control over the related goods as fulfillment activities rather than performance obligations. The shipping and handling fees charged to customers are recognized as revenue and the related costs are recorded in cost of revenue at the time of transfer of control.

We generally provide warranties for our products. The standard warranty period is typically 12 months to 24 months for our Photonics and Precision Motion segments and 12 months to 36 months for the Vision segment. The standard warranty period for product sales is accounted for under the provisions of ASC 450, "Contingencies," as we have the ability to ascertain the likelihood of the liability and can reasonably estimate the amount of the liability. A provision for the estimated cost related to warranty is recorded to cost of revenue at the time revenue is recognized. Our estimate of the costs to service warranty obligations is based on historical experience and expectations of future conditions. To the extent our experience in warranty claims or costs associated with servicing those claims differ from the original estimates, revisions to the estimated warranty liability are recorded at that time, with an offsetting entry recorded to cost of revenue.

We expense incremental direct costs of obtaining a contract when incurred if the expected amortization period is one year or less. These costs are recorded within selling, general and administrative expenses in the consolidated statement of operations. We do not adjust the promised amount of consideration for the effects of a financing component because the time period between the transfer of a promised good to a customer and the customer's payment for that good is typically one year or less.

Inventories. Inventories, which include materials and conversion costs, are stated at the lower of cost or net realizable value, using the first-in, first-out method. Cost includes the cost of purchased materials, inbound freight charges, customs duties and trade tariffs on imported materials and components, external and internal processing and applicable labor and overhead costs. Net realizable value is the estimated selling price in the ordinary course of business, less reasonably predictable costs of completion, disposal and transportation.

We regularly review inventory quantities on hand and, when necessary, record provisions for excess and obsolete inventory based on either our forecasted product demand and production requirements or trailing historical usage of the product. If our sales do not materialize as planned or at historical levels, we may have to increase our reserve for excess and obsolete inventory, which would reduce our earnings. If actual market conditions are more favorable than anticipated, inventory previously written down may be sold, resulting in lower cost of revenue and higher income from operations than expected in that period.

Share-Based Compensation. We record expenses associated with share-based compensation awards to employees and directors based on the fair value of awards as of the grant date. For share-based compensation awards that vest over time based on employment, the associated expenses are recognized in the consolidated statement of operations ratably over the vesting period of the award, net of estimated forfeitures.

We typically grant two types of performance-based awards to certain members of the executive management team: non-GAAP EPS performance-based restricted stock units ("EPS-PSUs") and relative total shareholder return performance-based restricted stock units ("TSR-PSUs"). For EPS-PSUs, share-based compensation expense is recognized ratably over the vesting period when it is probable that specified performance targets are expected to be achieved based on management's projections. Management's projections are revised, if necessary, in subsequent periods when underlying factors change the evaluation of the probability of achieving the performance targets as well as the level of achievement. When the estimated achievement levels are adjusted at a later date, a cumulative adjustment to the share-based compensation expense previously recognized would be required. Accordingly, share-based compensation expense associated with EPS-PSUs may differ significantly from period to period based on changes to both the probability and the level of achievement against performance targets. For TSR-PSUs, we recognize the related compensation expense based on the fair value of the TSR-PSUs, which is determined using the Monte-Carlo simulation valuation model as of the date of grant. The expense related to TSR-PSUs is recognized on a straight-line basis from the grant date to the end of the performance period, which is generally three years, regardless of whether the target relative total shareholder return is achieved.

The Monte Carlo simulation model utilizes multiple input variables that determine the probability of satisfying the performance conditions stipulated in the grant agreement in a large number of simulated scenarios. Key assumptions for the Monte Carlo simulation model include risk-free interest rate and expected stock price volatility of both the Company's common shares and the Russell 2000 index.

Valuation of Long-lived Assets. The purchase price we pay for acquired companies is allocated first to the identifiable assets acquired and liabilities assumed at their fair value. Any excess purchase price is then allocated to goodwill. We make various assumptions and estimates in order to assign fair value to acquired tangible and intangible assets and liabilities. Key assumptions typically include revenue growth rates and projected cash flows, discount rates, royalty rates, technology obsolescence curves, and customer attrition rates, among others. Actual cash flows may vary from forecasts used to value these assets at the time of the business combination.

Our most significant identifiable intangible assets are customer relationships, acquired technologies, trademarks and trade names. In addition to our review of the carrying value of each asset, the useful life assumption for each asset, including the classification of certain intangible assets as "indefinite-lived," are reviewed on a periodic basis to determine if changes in circumstances warrant revisions to them. All definite-lived intangible assets are amortized over the periods in which their economic benefits are expected to be realized.

Impairment analyses of goodwill and indefinite-lived intangible assets are conducted in accordance with ASC 350, "Intangibles—Goodwill and Other." We test our goodwill balances annually as of the beginning of the second quarter or more frequently if indicators are present, or changes in circumstances suggest, that an impairment may exist. Should the fair value of our goodwill or indefinite-lived intangible assets decline because of reduced operating performance, market declines or other indicators of impairment, or as a result of changes in the discount rate, charges for impairment loss may be necessary.

We evaluate our goodwill, intangible assets and other long-lived assets for impairment at the reporting unit level which is generally at least one level below our reportable segments. We have the option of first performing a qualitative assessment to determine whether it is necessary to perform the quantitative impairment test. In performing the qualitative assessment, we review factors both specific to the reporting unit and to the Company as a whole, such as financial performance, macroeconomic conditions, industry and market considerations, and the fair value of each reporting unit as of the last valuation date. If we elect this option and believe, as a result of the qualitative assessment, that it is more likely than not that the carrying value of goodwill is not recoverable, the quantitative impairment test is required; otherwise, no further testing is required.

Alternatively, we may elect to bypass the qualitative assessment and perform the quantitative impairment test instead. This approach requires a comparison of the carrying value of each of our reporting units to the fair value of these reporting units. If the carrying value of a reporting unit exceeds its fair value, an impairment charge is recorded for the difference. The fair value of a reporting unit is estimated primarily using a discounted cash flow ("DCF") method. The DCF approach requires that we forecast future cash flows for each of the reporting units and discount the cash flow streams based on a weighted average cost of capital ("WACC") that is derived, in part, from comparable companies within similar industries. The DCF calculations also include a terminal value calculation that is based upon an expected long-term growth rate for the applicable reporting unit. The carrying values of each reporting unit include assets and liabilities which relate to the reporting unit's operations. Additionally, reporting units that benefit from corporate assets or liabilities are allocated a portion of those corporate assets and liabilities on a proportional basis.

We assess indefinite-lived intangible assets for impairment on an annual basis, and more frequently if impairment indicators are identified. We also periodically reassess their continuing classification as indefinite-lived intangible assets. Impairment exists if the fair value of the intangible asset is less than its carrying value. An impairment charge equal to the difference is recorded to reduce the carrying value to its fair value.

We evaluate amortizable intangible assets and other long-lived assets for impairment in accordance with ASC 360-10-35-15, "Impairment or Disposal of Long-Lived Assets," whenever changes in events or circumstances indicate that the carrying values of the reporting units may exceed the undiscounted cash flow forecasts attributable to the reporting units. If undiscounted cash flow forecasts indicate that the carrying value of definite-lived intangible assets or other long-lived assets may not be recoverable, a fair value assessment is performed. For intangible assets, fair value estimates are derived from discounted cash flow forecasts. For other long-lived assets (primarily property, plant and equipment), fair value estimates are derived from the sources most appropriate for the particular asset and have historically included such approaches as sales comparison approach and replacement cost approach. If fair value is less than carrying value, an impairment charge equal to the difference is recorded. We also review the useful life and residual value assumptions for definite-lived intangible assets and other long-lived assets on a periodic basis to determine if changes in circumstances warrant revisions to them.

Factors which may trigger an impairment of our goodwill, intangible assets and other long-lived assets include the following:

- significant underperformance relative to historical or projected future operating results;
- changes in our use of the acquired assets or the strategy for our overall business;
- long-term negative industry or economic trends;
- technological changes or developments;
- changes in competition;
- loss of key customers or personnel;
- adverse judicial or legislative outcomes or political developments;
- significant declines in our stock price for a sustained period of time; and
- the decline of our market capitalization below net book value as of the end of any reporting period.

The occurrence of any of these events or any other unforeseeable events or circumstances that materially affect future operating results or cash flows may cause an impairment that is material to our results of operations or financial position in the reporting period in which it occurs or is identified.

The most recent annual goodwill and indefinite-lived intangible asset impairment test was performed as of the beginning of the second quarter of 2020, using a quantitative assessment, noting no impairment. As of December 31, 2020, there were no indicators of impairment of our long-lived assets.

We have a significant amount of goodwill, intangible assets and other long-lived assets. The following table shows the breakdown of goodwill, intangible assets and property, plant and equipment by reportable segment as of December 31, 2020 (in thousands):

	Goodwill	Intangible Assets, net	Property, Plant & Equipment, net
Photonics	\$ 116,056	\$ 59,900	\$ 32,449
Vision	133,473	69,253	33,181
Precision Motion	36,451	19,368	8,762
Unallocated Corporate and Shared Services	—	—	4,284
Total	\$ 285,980	\$ 148,521	\$ 78,676

Contingent Consideration. We record contingent consideration resulting from a business combination at its fair value on the acquisition date. Key assumptions used in the determination of the fair value of the contingent consideration include the following:

- future revenue projections;
- volatility of future revenue; and
- discount rates used to present value the projected cash flows.

On a quarterly basis, we revalue these assumptions and record the necessary adjustments to fair value in the consolidated statement of operations. Changes to contingent consideration obligation can result from adjustments to future revenue projections, volatility of future revenue and discount rates.

The assumptions used for the determination of the fair value of contingent considerations include a significant amount of judgment, and changes in the underlying estimates could have a material impact on the amount of contingent consideration expense recorded in any given period.

Accounting for Income Taxes. As part of the process of preparing our consolidated financial statements, we are required to calculate our income tax provision (benefit) in each of the jurisdictions in which we operate. This process involves estimating our current income tax provision (benefit) together with assessing temporary differences resulting from differing treatment of items for tax and accounting purposes. These differences result in deferred tax assets and liabilities, which are reported on our consolidated balance sheet.

Judgment is required in determining our worldwide income tax provision. In the ordinary course of a global business, there are many transactions and calculations where the ultimate outcome is uncertain. Although we believe our estimates are reasonable, there is no assurance that the final outcome of these matters will not be different from that which is reflected in our historical income tax provisions and accruals. Such differences could have a material impact on our income tax provision and net income in the period in which such determination is made.

We record a valuation allowance on our deferred tax assets when it is more likely than not that they will not be realized. We have considered future taxable income and ongoing prudent and feasible tax planning strategies in assessing the need for a valuation allowance. In the event we determine that we are able to realize our deferred tax assets in the future in excess of their net recorded amount, an adjustment to the valuation allowance for the deferred tax assets would be recorded and would increase our net income in the period in which such determination is made. Likewise, should we determine that we will not be able to realize all or part of our net deferred tax assets in the future, an adjustment to the valuation allowance for the deferred tax assets will be recorded and will reduce our net income in the period such determination is made.

In conjunction with our ongoing review of our actual results and anticipated future earnings, we continuously reassess the adequacy of the valuation allowance currently in place on our deferred tax assets. In 2020, we reversed valuation allowance of \$0.7 million recorded on net operating losses and other timing items in certain tax jurisdictions due to current and forecasted taxable income.

The amount of income taxes we pay is subject to audits by federal, state and foreign tax authorities, which may result in proposed assessments. We believe that we have adequately provided for any reasonably foreseeable outcome related to these matters. However, our future results may include favorable or unfavorable adjustments to our tax liabilities in the period that the assessments are made or resolved, or when the statute of limitations for certain periods expires. As of December 31, 2020, the total amount of gross unrecognized tax benefits was \$5.3 million, of which \$5.0 million would favorably affect our effective tax rate, if recognized. Over the next twelve months, we may need to recognize up to \$0.5 million of previously unrecognized tax benefits in the event of statute of limitations closures.

Income and foreign withholding taxes have not been recognized on the excess of the amount for financial reporting purposes over the tax basis of investments in foreign subsidiaries that are essentially permanent in nature. This amount becomes taxable upon a repatriation of assets from a subsidiary or a sale or liquidation of a subsidiary. The amount of undistributed earnings of foreign subsidiaries totaled \$220.4 million as of December 31, 2020. The estimated unrecognized income and foreign withholding tax liabilities on this temporary difference is approximately \$3.9 million.

Loss Contingencies. We are subject to legal proceedings, lawsuits and other claims relating to product quality, labor, service and other matters arising in the ordinary course of business. We review the status of each significant matter and assess our potential financial exposure on a quarterly basis. If the potential loss from any claim or legal proceeding is considered probable and the amount can be reasonably estimated, we accrue a liability for the estimated loss. Significant judgment is required in both the determination of probability and the determination as to whether an exposure is reasonably estimable. Because of uncertainties related to these matters, accruals are based only on the best information available as of the date of the financial statement. As additional information becomes available, we will reassess the potential liability related to our pending claims and litigation and may revise our estimates. Such revisions in the estimates of the potential liabilities could have a material impact on our results of operations and financial position. We expense legal fees as incurred.

Recent Accounting Pronouncements

See Note 2 to Consolidated Financial Statements for recent accounting pronouncements that could have an effect on us.

Item 7A. Quantitative and Qualitative Disclosures about Market Risk

We are exposed to market risk from changes in foreign currency exchange rates and interest rates, which could affect our operating results, financial position and cash flows. We manage our exposure to these market risks through our regular operating and financing activities. We address market risks from changes in foreign currency exchange rates through a risk management program that includes the use of derivative financial instruments to mitigate certain foreign currency transaction exposures from future settlement of non-functional currency monetary assets and liabilities as of the end of a period.

Foreign Currency Exchange Rate Risk and Sensitivity

We are exposed to changes in foreign currency exchange rates which could affect our operating results as well as our financial position and cash flows. The foreign currencies to which we have the most significant exchange rate exposures are the Euro, British Pound and Japanese Yen. The Company manages its foreign currency exposures on a consolidated basis, which allows the Company to analyze exposures globally and take into account offsetting exposures in certain balances. The primary foreign currency denominated transactions include revenue and expenses and the resulting accounts receivable and accounts payable balances reflected on our consolidated balance sheet and with intercompany trading partners that are eliminated in consolidation.

In the ordinary course of business, we enter into foreign currency contracts for periods consistent with our committed exposures to mitigate the effect of foreign currency movements on transactions denominated in foreign currencies. We do not enter into or hold foreign currency derivative financial instruments for trading or speculative purposes, nor do we enter into derivative financial instruments to hedge future cash flows or forecasted transactions. The intent of these economic hedges is to offset gains and losses on the underlying exposures from these currencies with gains and losses resulting from the foreign currency contracts that hedge these exposures.

We had foreign currency contracts with notional amounts totaling \$28.5 million and a fair value of less than \$0.1 million as of December 31, 2020. A hypothetical 10% strengthening of the U.S. dollar against other currencies would result in an approximately \$1.6 million increase in the fair value of our foreign currency contracts as of December 31, 2020. By contrast, a hypothetical 10% weakening of the U.S. dollar against other currencies would result in an approximately \$1.6 million decrease in the fair value of our foreign currency contracts as of December 31, 2020.

Interest Rates

Our exposure to market risk associated with changes in interest rates relates primarily to our debt obligations. We have \$204.8 million of outstanding variable rate debt as of December 31, 2020. A 100 basis point increase in interest rates at December 31, 2020 would increase our annual pre-tax interest expense by approximately \$2.0 million.

NOVANTA INC.

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Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders of Novanta Inc.

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of Novanta Inc. and its subsidiaries (the “Company”) as of December 31, 2020 and 2019, and the related consolidated statements of operations, comprehensive income, stockholders’ equity and cash flows for each of the three years in the period ended December 31, 2020, including the related notes (collectively referred to as the “consolidated financial statements”). We also have audited the Company’s internal control over financial reporting as of December 31, 2020, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2020 and 2019, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2020 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2020, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the COSO.

Changes in Accounting Principles

As discussed in Note 2 to the consolidated financial statements, the Company changed the manner in which it accounts for leases in 2019.

Basis for Opinions

The Company’s management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in Management’s Annual Report on Internal Control Over Financial Reporting appearing under Item 9A. Our responsibility is to express opinions on the Company’s consolidated financial statements and on the Company’s internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

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

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

Definition and Limitations of Internal Control over Financial Reporting

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

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

Critical Audit Matters

The critical audit matter communicated below is a matter arising from the current period audit of the consolidated financial statements that was communicated or required to be communicated to the audit committee and that (i) relates to accounts or disclosures that are material to the consolidated financial statements and (ii) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters 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 accounts or disclosures to which it relates.

Fair Value Measurements of the Contingent Consideration for ARGES GmbH and Ingenia-CAT, S.L. Acquisitions

As described in Notes 4 and 7 to the consolidated financial statements, the Company had \$8.0 million of contingent consideration liabilities as of December 31, 2020 related to the 2019 acquisitions of ARGES GmbH and Ingenia-CAT, S.L. The contingent consideration payments are payable annually based on the achievement of certain revenue targets by the Company from July 2019 through December 2026 for ARGES GmbH and from April 2019 through March 2022 for Ingenia-CAT, S.L. Management determines the estimated fair value of contingent consideration liabilities using a Monte Carlo valuation method. The following unobservable inputs were used by management to determine the fair value measurement of the contingent consideration liabilities: historical and projected revenues, revenue volatilities, cost of debt, and the discount rates.

The principal considerations for our determination that performing procedures relating to the fair value measurements of the contingent consideration for ARGES GmbH and Ingenia-CAT, S.L. acquisitions is a critical audit matter are (i) the significant judgment by management when developing the estimated fair value measurements; (ii) a high degree of auditor judgment, subjectivity and effort in performing procedures and evaluating audit evidence relating to the Monte Carlo valuation method and evaluating management's significant assumptions related to the projected revenues, revenue volatilities, and the discount rates; and (iii) the audit effort involved the use of professionals with specialized skill and knowledge.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to management's fair value measurements of the contingent consideration, including controls over management's valuation method, significant assumptions and data. These procedures also included, among others, (i) testing management's process for developing the fair value measurements of the contingent consideration, (ii) evaluating the appropriateness of the Monte Carlo valuation method, (iii) testing the completeness and accuracy of underlying data used in the method, and (iv) evaluating the significant assumptions used by management related to the projected revenues, revenue volatilities, and discount rates. Evaluating the assumptions related to projected revenues involved evaluating whether the assumptions used by management were reasonable considering current and past performance of the acquired businesses, consistency with external market data, and whether these assumptions were consistent with evidence obtained in other areas of the audit. Professionals with specialized skill and knowledge were used to assist in the evaluation of the Company's Monte Carlo valuation method and the revenue volatilities and discount rates assumptions.

/s/ PricewaterhouseCoopers LLP

Boston, Massachusetts
March 1, 2021

We have served as the Company's auditor since 2013.

NOVANTA INC.
CONSOLIDATED BALANCE SHEETS
(In thousands of U.S. dollars or shares)

	December 31, 2020	December 31, 2019
ASSETS		
Current Assets		
Cash and cash equivalents	\$ 125,054	\$ 78,944
Accounts receivable, net of allowance of \$274 and \$297, respectively	75,054	91,078
Inventories	92,737	116,618
Prepaid income taxes and income taxes receivable	3,203	5,905
Prepaid expenses and other current assets	8,125	11,967
Total current assets	304,173	304,512
Property, plant and equipment, net	78,676	77,556
Operating lease assets	34,444	35,180
Deferred tax assets	10,491	8,890
Other assets	2,894	2,713
Intangible assets, net	148,521	166,175
Goodwill	285,980	274,710
Total assets	<u>\$ 865,179</u>	<u>\$ 869,736</u>
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current Liabilities		
Current portion of long-term debt	\$ 5,508	\$ 5,031
Accounts payable	42,966	52,585
Income taxes payable	5,787	1,861
Current portion of operating lease liabilities	6,188	5,043
Accrued expenses and other current liabilities	53,780	70,326
Total current liabilities	114,229	134,846
Long-term debt	194,927	215,334
Operating lease liabilities	32,802	34,108
Deferred tax liabilities	24,134	26,676
Income taxes payable	5,112	4,713
Other liabilities	17,166	36,887
Total liabilities	388,370	452,564
Commitments and Contingencies (Note 17)		
Stockholders' Equity:		
Common shares, no par value; Authorized shares: unlimited; Issued and outstanding: 35,163 and 35,052, respectively	423,856	423,856
Additional paid-in capital	58,992	49,748
Accumulated deficit	6,202	(38,319)
Accumulated other comprehensive loss	(12,241)	(18,113)
Total stockholders' equity	476,809	417,172
Total liabilities and stockholders' equity	<u>\$ 865,179</u>	<u>\$ 869,736</u>

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

NOVANTA INC.
CONSOLIDATED STATEMENTS OF OPERATIONS
(In thousands of U.S. dollars or shares, except per share amounts)

	Year Ended December 31,		
	2020	2019	2018
Revenue	\$ 590,623	\$ 626,099	\$ 614,337
Cost of revenue	346,106	364,014	352,809
Gross profit	244,517	262,085	261,528
Operating expenses:			
Research and development and engineering	60,996	55,965	51,024
Selling, general and administrative	109,853	118,407	115,900
Amortization of purchased intangible assets	13,970	15,857	15,550
Restructuring and acquisition related costs	3,810	16,574	8,041
Total operating expenses	188,629	206,803	190,515
Operating income	55,888	55,282	71,013
Interest income (expense), net	(6,564)	(8,493)	(9,814)
Foreign exchange transaction gains (losses), net	(942)	(780)	147
Other income (expense), net	21	(243)	(44)
Income before income taxes	48,403	45,766	61,302
Income tax provision	3,882	4,993	10,207
Consolidated net income	44,521	40,773	51,095
Less: Net income attributable to noncontrolling interest	—	-	(1,986)
Net income attributable to Novanta Inc.	\$ 44,521	\$ 40,773	\$ 49,109
Earnings per common share attributable to Novanta Inc. (Note 9):			
Basic	\$ 1.27	\$ 1.16	\$ 1.46
Diluted	\$ 1.25	\$ 1.15	\$ 1.43
Weighted average common shares outstanding—basic	35,144	35,030	34,913
Weighted average common shares outstanding—diluted	35,654	35,546	35,473

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

NOVANTA INC.
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(In thousands of U.S. dollars)

	Year Ended December 31,		
	2020	2019	2018
Consolidated net income	\$ 44,521	\$ 40,773	\$ 51,095
Other comprehensive income (loss):			
Foreign currency translation adjustments, net of tax (1)	6,922	3,267	(4,172)
Pension liability adjustments, net of tax (2)	(1,050)	1,147	(475)
Total other comprehensive income (loss)	5,872	4,414	(4,647)
Total consolidated comprehensive income	50,393	45,187	46,448
Less: Comprehensive income attributable to noncontrolling interest	—	—	(1,986)
Comprehensive income attributable to Novanta Inc.	\$ 50,393	\$ 45,187	\$ 44,462

(1) The tax effect on this component of comprehensive income was \$0, \$3 and (\$93) in 2020, 2019 and 2018, respectively.

(2) The tax effect on this component of comprehensive income was (\$202), \$267 and (\$153) in 2020, 2019 and 2018, respectively.

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

NOVANTA INC.
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
(In thousands of U.S. dollars or shares)

	Common Shares		Additional Paid-In Capital	Accumulated Deficit	Accumulated Other Comprehensive Loss	Total
	# of Shares	Amount				
Balance at December 31, 2017	34,595	\$ 423,856	\$ 33,309	\$ (127,740)	\$ (17,880)	\$ 311,545
Net income	—	—	—	49,109	—	49,109
Redeemable noncontrolling interest redemption value adjustment	—	—	—	1,781	—	1,781
Acquisition of noncontrolling interest	213	—	14,401	—	—	14,401
Common shares issued under stock plans	231	—	—	—	—	—
Common shares withheld for taxes on vested stock awards	(64)	—	(3,556)	—	—	(3,556)
Repurchases of common shares	(89)	—	(5,850)	—	—	(5,850)
Share-based compensation	—	—	7,714	—	—	7,714
Adoption of ASU 2016-16	—	—	—	(2,242)	—	(2,242)
Other comprehensive income, net of tax	—	—	—	—	(4,647)	(4,647)
Balance at December 31, 2018	34,886	423,856	46,018	(79,092)	(22,527)	368,255
Net income	—	—	—	40,773	—	40,773
Common shares issued for business combination	124	—	10,900	—	—	10,900
Common shares issued under stock plans	247	—	425	—	—	425
Common shares withheld for taxes on vested stock awards	(86)	—	(6,935)	—	—	(6,935)
Repurchases of common shares	(119)	—	(10,000)	—	—	(10,000)
Share-based compensation	—	—	9,340	—	—	9,340
Other comprehensive loss, net of tax	—	—	—	—	4,414	4,414
Balance at December 31, 2019	35,052	423,856	49,748	(38,319)	(18,113)	417,172
Net income	—	—	—	44,521	—	44,521
Common shares issued under stock plans	270	—	179	—	—	179
Common shares withheld for taxes on vested stock awards	(94)	—	(8,554)	—	—	(8,554)
Repurchases of common shares	(65)	—	(5,500)	—	—	(5,500)
Share-based compensation	—	—	23,119	—	—	23,119
Other comprehensive income, net of tax	—	—	—	—	5,872	5,872
Balance at December 31, 2020	35,163	\$ 423,856	\$ 58,992	\$ 6,202	\$ (12,241)	\$ 476,809

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

NOVANTA INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS
(In thousands of U.S. dollars)

	Year Ended December 31,		
	2020	2019	2018
Cash flows from operating activities:			
Consolidated net income	\$ 44,521	\$ 40,773	\$ 51,095
Adjustments to reconcile consolidated net income to net cash provided by operating activities:			
Depreciation and amortization	38,293	38,280	37,052
Provision for inventory excess and obsolescence	4,002	3,188	1,898
Share-based compensation	23,119	9,340	7,714
Deferred income taxes	(4,113)	(4,332)	(6,076)
Loss on disposal of fixed assets	120	756	106
Contingent consideration adjustments	(6,632)	100	—
Inventory acquisition fair value adjustment	188	1,270	—
Non-cash interest expense	1,045	1,055	955
Other non-cash items	157	259	(165)
Changes in assets and liabilities which provided/(used) cash, excluding effects from businesses acquisitions:			
Accounts receivable	18,026	(3,600)	(1,156)
Inventories	22,102	(7,397)	(15,603)
Prepaid expenses and other current assets	4,456	(1,526)	1,350
Prepaid income taxes, income taxes receivable and income taxes payable	6,015	(4,966)	(1,485)
Accounts payable, accrued expenses and other current liabilities	(14,484)	(14,800)	14,888
Other non-current assets and liabilities	3,424	4,848	(926)
Cash provided by operating activities	140,239	63,248	89,647
Cash flows from investing activities:			
Purchases of property, plant and equipment	(10,524)	(10,743)	(14,658)
Acquisition of businesses, net of cash acquired and working capital adjustments	—	(53,143)	(29,600)
Acquisition of assets	—	—	(1,599)
Payment of contingent consideration related to acquisition of technology assets	(2,632)	—	—
Proceeds from sale of property, plant and equipment	—	42	267
Cash used in investing activities	(13,156)	(63,844)	(45,590)
Cash flows from financing activities:			
Borrowings under revolving credit facilities	—	66,792	55,253
Repayments under term loan and revolving credit facilities	(35,391)	(50,694)	(74,648)
Payments of debt issuance costs	(1,614)	(2,655)	—
Payments of withholding taxes from share-based awards	(8,554)	(6,935)	(3,556)
Payments of deferred and escrowed purchase price related to acquisitions	(31,021)	—	—
Payment of contingent consideration related to an acquisition	(1,135)	—	—
Repurchases of common shares	(5,500)	(10,000)	(5,850)
Acquisition of noncontrolling interest	—	—	(30,800)
Other financing activities	(1,142)	(443)	(563)
Cash provided by (used in) financing activities	(84,357)	(3,935)	(60,164)
Effect of exchange rates on cash and cash equivalents	3,384	1,432	(1,907)
Increase (decrease) in cash and cash equivalents	46,110	(3,099)	(18,014)
Cash and cash equivalents, beginning of year	78,944	82,043	100,057
Cash and cash equivalents, end of year	\$ 125,054	\$ 78,944	\$ 82,043
Supplemental disclosure of cash flow information:			
Cash paid for interest	\$ 5,529	\$ 8,389	\$ 8,924
Cash paid for income taxes	\$ 5,879	\$ 14,260	\$ 20,323
Income tax refunds received	\$ 4,833	\$ 767	\$ 3,011
Supplemental disclosure of non-cash investing activity:			
Accrual for capital expenditures	\$ 166	\$ 638	\$ 1,187

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

NOVANTA INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
AS OF DECEMBER 31, 2020

1. Organization and Basis of Presentation

Novanta Inc. and its subsidiaries (collectively referred to as “Novanta”, the “Company”, “we”, “us”, “our”) is a leading global supplier of core technology solutions that give medical and advanced industrial original equipment manufacturers (“OEMs”) a competitive advantage. Novanta combines deep proprietary technology expertise and competencies in photonics, vision and precision motion with a proven ability to solve complex technical challenges. This enables Novanta to engineer core components and sub-systems that deliver extreme precision and performance, tailored to the customers’ demanding applications.

Basis of Presentation

These consolidated financial statements have been prepared by the Company in United States (“U.S.”) dollars and in accordance with accounting principles generally accepted in the U.S., applied on a consistent basis.

The consolidated financial statements include the accounts of Novanta Inc. and its subsidiaries. Intercompany accounts and transactions have been eliminated.

Prior to January 10, 2017, the Company had an approximately 41% ownership interest in Laser Quantum Limited (“Laser Quantum”), a privately held company located in the United Kingdom (“U.K.”), which was accounted for under the equity method of accounting. On January 10, 2017, the Company acquired an additional approximately 35% of the outstanding shares of Laser Quantum for \$31.1 million in cash. As a result of this transaction, the Company’s ownership in Laser Quantum increased from approximately 41% to approximately 76%. Since January 10, 2017, Laser Quantum has been consolidated in the Company’s consolidated financial statements. On September 27, 2018, the Company acquired the remaining approximately 24% of the outstanding shares of Laser Quantum for an aggregate consideration of \$45.1 million in cash and restricted stock.

2. Summary of Significant Accounting Policies

Use of Estimates

The preparation of financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, disclosure of contingent assets and liabilities at the dates of the financial statements, and the reported amounts of revenue and expenses during the reporting periods. Estimates and assumptions are reviewed on an on-going basis and the effects of revisions are reflected in the period in which they are deemed to be necessary. The Company evaluates its estimates based on historical experience, current conditions, including estimated economic implications of the COVID-19 pandemic, and various other assumptions that it believes are reasonable under the circumstances. The accounting estimates assessed included, but were not limited to, the Company’s allowance for doubtful accounts and credit losses, inventory and related reserves, accruals for contingent earnout agreements from business acquisitions, share-based compensation expense associated with performance-based restricted stock units, and the carrying value of goodwill and other long-lived assets. While there was not a material change to the consolidated financial statements related to these estimates as of and for the year ended December 31, 2020, the Company’s future assessment of the magnitude and duration of the COVID-19 pandemic, as well as other factors, could result in material impacts to the Company’s consolidated financial statements in future reporting periods.

Foreign Currency Translation

The financial statements of the Company and its subsidiaries outside the U.S. have been translated into U.S. dollars. Assets and liabilities of foreign operations are translated from foreign currencies into U.S. dollars at the exchange rates in effect as of the balance sheet date. Revenue and expenses are translated at the weighted average exchange rates for the period. Accordingly, gains and losses resulting from translating foreign currency financial statements are reported as cumulative translation adjustments, a separate component of other comprehensive income (loss) in stockholders’ equity. Foreign currency transaction gains and losses from transactions denominated in currencies other than the functional currencies are included in the accompanying consolidated statements of operations.

Cash Equivalents

Cash equivalents are highly liquid investments with original maturities of three months or less. These investments are carried at cost, which approximates fair value.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
AS OF DECEMBER 31, 2020

Accounts Receivable and Credit Losses

Accounts receivable are recorded at the invoiced amounts, net of an allowance for doubtful accounts based on the Company's best estimate of probable credit losses. The Company is exposed to credit losses primarily through sales of its products. The Company assesses each customer's ability to pay by conducting a credit review which includes consideration of established credit rating or an internal assessment of the customer's creditworthiness based on an analysis of their payment history when a credit rating is not available. The Company monitors the credit exposure through active review of customer balances. The Company's expected loss methodology for accounts receivable is developed through consideration of factors including, but not limit to, historical collection experience, current customer credit ratings, current customer financial condition, current and future economic and market condition, and age of the receivables. Charges related to credit losses are included as selling, general and administrative expenses and are recorded in the period that the outstanding receivables are determined to be uncollectible. Account balances are charged off against the allowance when the Company believes it is certain that the receivable will not be recovered.

For the years ended December 31, 2020, 2019 and 2018, changes in the allowance for doubtful accounts were as follows (in thousands):

	2020	2019	2018
Balance at beginning of year	\$ 297	\$ 321	\$ 554
Addition to credit loss expense	158	33	66
Credit loss resulting from acquisitions	—	120	—
Write-offs, net of recoveries of amounts previously reserved	(207)	(179)	(295)
Exchange rate changes	26	2	(4)
Balance at end of year	<u>\$ 274</u>	<u>\$ 297</u>	<u>\$ 321</u>

Inventories

Inventories, which include materials and conversion costs, are stated at the lower of cost or net realizable value, using the first-in, first-out method. Cost includes the cost of purchased materials, inbound freight charges, external and internal processing and applicable labor and overhead costs. Net realizable value is the estimated selling price in the ordinary course of business, less reasonably predictable costs of completion, disposal and transportation. The Company periodically reviews quantities of inventories on hand and compares these amounts to the expected use of each product. The Company records a charge to cost of revenue for the amount required to reduce the carrying value of inventory to the net realizable value.

Property, Plant and Equipment

Property, plant and equipment are recorded at cost, adjusted for any impairment, less accumulated depreciation. The Company uses the straight-line method to calculate the depreciation of its property, plant and equipment over their estimated useful lives. Estimated useful lives range from 3 to 30 years for buildings and building improvements and 3 to 10 years for machinery and equipment. Leasehold improvements are depreciated over the lesser of their useful lives or the lease terms, including any renewal period options that are reasonably assured of being exercised. Repairs and maintenance costs are expensed as incurred. Certain costs to develop software for internal use are capitalized when the criteria under Accounting Standards Codification ("ASC") 350-40, "Internal-Use Software," are met.

Goodwill, Intangible Assets and Long-Lived Assets

Goodwill represents the excess of the purchase price over the tangible assets, identifiable intangible assets and assumed liabilities acquired in a business combination. Allocations of the purchase price are based upon a valuation of the fair value of assets acquired and liabilities assumed as of the acquisition date. Goodwill and indefinite-lived intangibles are not amortized but are assessed for impairment at least annually to ensure their current fair values exceed their carrying values.

The Company's most significant intangible assets are customer relationships, patents and developed technologies, trademarks and trade names. The fair values of intangible assets are based on valuations using an income approach, with estimates and assumptions provided by management of the acquired companies and the Company. The process for estimating the fair values of identifiable intangible assets requires the use of significant estimates and assumptions, including revenue growth rates, customer attrition rates, royalty rates, discount rates and projected future cash flows. All definite-lived intangible assets are amortized over the

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
AS OF DECEMBER 31, 2020

periods in which their economic benefits are expected to be realized. The Company reviews the useful life assumptions, including the classification of certain intangible assets as “indefinite-lived,” on a periodic basis to determine if changes in circumstances warrant revisions to them. Costs associated with patent and intellectual property applications, renewals or extensions are typically expensed as incurred.

The Company evaluates its goodwill, intangible assets and other long-lived assets for impairment at the reporting unit level which is at least one level below the reportable segments.

Impairment Charges

Impairment analyses of goodwill and indefinite-lived intangible assets are conducted in accordance with ASC 350, “Intangibles —Goodwill and Other.” The Company performs its goodwill impairment test annually as of the beginning of the second quarter or more frequently if indicators are present or changes in circumstances suggest that an impairment may exist.

The Company has the option of first performing a qualitative assessment to determine whether it is necessary to perform the quantitative impairment test. In performing the qualitative assessment, the Company reviews factors both specific to the reporting unit and to the Company as a whole, such as financial performance, macroeconomic conditions, industry and market considerations, and the fair value of each reporting unit at the last valuation date. If the Company elects this option and believes, as a result of the qualitative assessment, that it is more likely than not that the carrying value of the reporting unit exceeds its fair value, the quantitative impairment test is required; otherwise, no further testing is required.

Alternatively, the Company may elect to bypass the qualitative assessment and perform the quantitative impairment test instead. This approach requires a comparison of the carrying value of each of the Company’s reporting units to the estimated fair value of these reporting units. The fair value of a reporting unit is estimated primarily using a discounted cash flow (“DCF”) method with a weighted average cost of capital. If the carrying value of a reporting unit exceeds its fair value, an impairment charge is recorded for the difference.

The Company assesses indefinite-lived intangible assets for impairment on an annual basis as of the beginning of the second quarter, and more frequently if indicators are present, or changes in circumstances suggest, that an impairment may exist. The Company will also reassess the continuing classification of these intangible assets as indefinite-lived when circumstances change such that the useful life may no longer be considered indefinite. The fair values of the Company’s indefinite-lived intangible assets are determined using the relief from royalty method, based on forecasted revenues and estimated royalty rates. If the fair value of an indefinite-lived intangible asset is less than its carrying value, an impairment charge is recorded for the difference between the carrying value and the fair value of the impaired asset.

The carrying amounts of definite-lived long-lived assets are reviewed for impairment whenever changes in events or circumstances indicate that their carrying values may not be recoverable. The recoverability of the carrying value is generally determined by comparison of the asset group’s carrying value to its undiscounted future cash flows. When this test indicates a potential for impairment, a fair value assessment is performed. Once an impairment is determined and measured, an impairment charge is recorded for the difference between the carrying value and the fair value of the impaired asset.

Revenue Recognition

See Note 3 for the Company’s revenue recognition policy.

Leases

The Company leases certain equipment and facilities. The Company determines if an arrangement is a lease at inception. Operating lease right-of-use assets are included in operating lease assets on the consolidated balance sheet. Operating lease liabilities are included in current portion of operating lease liabilities and operating lease liabilities on the consolidated balance sheet based on the timing of future lease payments. Finance lease assets are included in property, plant and equipment. Finance lease liabilities are included in accrued expenses and other current liabilities and other liabilities on the consolidated balance sheet based on the timing of future lease payments. Leases with an initial term of 12 months or less are not recognized on the balance sheet. The Company recognizes lease expense on a straight-line basis over the lease term. Many of the Company’s lease arrangements include both lease (e.g., fixed payments including rent) and non-lease components (e.g., common-area maintenance or other property management costs). The Company accounts for lease and non-lease components separately.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
AS OF DECEMBER 31, 2020

Most leases held by the Company do not provide an implicit rate. The Company uses its incremental borrowing rate for the same jurisdiction and term as the associated lease based on the information available at the lease commencement date to determine the present value of future lease payments. The Company used the incremental borrowing rate as of January 1, 2019 for operating leases that commenced prior to that date. The Company has a centrally managed treasury function; therefore, the Company applies a portfolio approach for determining the incremental borrowing rate based on the applicable lease terms and the current economic environment.

Research and Development and Engineering Costs

Research and development and engineering (“R&D”) expenses are primarily comprised of employee related expenses and cost of materials for R&D projects. These costs are expensed as incurred.

Share-Based Compensation

The Company records the expense associated with share-based compensation awards to employees and directors based on the fair value of awards as of the grant date. For share-based compensation awards that vest over time based on employment, the associated expenses are recognized in the consolidated statements of operations ratably over the vesting period, net of estimated forfeitures.

The Company also grants two types of performance-based awards to certain members of the executive management team: non-GAAP earnings per share performance-based restricted stock units (“EPS-PSUs”) and relative total shareholder return performance-based restricted stock units (“TSR-PSUs”). Share-based compensation expense associated with EPS-PSUs is recognized ratably over the vesting period when it is probable that the performance targets are expected to be achieved based on management’s projections. Management’s projections are revised, if necessary, in subsequent periods when underlying factors change the evaluation of the probability of achieving the performance targets as well as the level of achievement. When the estimated achievement levels are adjusted at a later date, a cumulative adjustment to the share-based compensation expense previously recognized would be required. Accordingly, share-based compensation expense associated with EPS-PSUs may differ significantly from period to period based on changes to both the probability and the level of achievement against performance targets. Share-based compensation expense associated with TSR-PSUs is based on the grant-date fair value, determined using the Monte-Carlo valuation model, and is recognized on a straight-line basis from the grant date to the end of the performance period. Compensation expense will not be affected by the number of TSR-PSUs that will actually vest at the end of the performance period.

Advertising Costs

Advertising costs are expensed to selling, general and administrative expenses as incurred and were not material for 2020, 2019 and 2018.

Restructuring and Acquisition Related Costs

The Company accounts for its restructuring activities in accordance with the provisions of ASC 420, “Exit or Disposal Cost Obligations.” The Company makes assumptions related to the amounts of employee severance benefits and related costs, useful lives and residual value of long-lived assets, and discount rates. Estimates and assumptions are based on the best information available at the time the obligation is recognized. These estimates are reviewed and revised as facts and circumstances dictate.

Acquisition related costs incurred to effect a business combination, including finders’ fees, legal, valuation and other professional or consulting fees, are expensed as incurred. Acquisition related costs also include expenses recognized under earn-out agreements in connection with acquisitions.

Accounting for Income Taxes

The asset and liability method is used to account for income taxes. Under the asset and liability method, deferred tax assets and liabilities are recognized for the estimated future tax consequences attributable to temporary differences between the financial statement carrying amounts of assets and liabilities and their respective tax bases. This method also requires the recognition of future tax benefits, such as net operating loss carryforwards, to the extent that it is more likely than not that such benefits will be realized. Deferred tax assets and liabilities are measured using enacted tax rates in effect for the year in which the temporary differences are expected to be recovered or settled. A valuation allowance is established to reduce the deferred tax assets if it is

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
AS OF DECEMBER 31, 2020

more likely than not that some or all of the related tax benefits will not be realized in the future. Valuation allowances are reassessed periodically to determine whether it is more likely than not that the tax benefits will be realized in the future and if any existing valuation allowance should be released.

The majority of the Company's business activities are conducted through its subsidiaries outside of Canada. Earnings from these subsidiaries are generally indefinitely reinvested in the local businesses. Further, local laws and regulations may also restrict certain subsidiaries from paying dividends to their parents. Consequently, the Company generally does not accrue income taxes for the repatriation of such earnings in accordance with ASC 740, "Income Taxes." To the extent that there are excess accumulated earnings that the Company intends to repatriate from any such subsidiaries, the Company recognizes deferred tax liabilities on such foreign earnings.

The Company assesses its income tax positions and records tax benefits for all years subject to examination based on the evaluation of the facts, circumstances, and information available at each reporting date. For those tax positions with a greater than 50 percent likelihood of being realized upon ultimate settlement with a taxing authority that has full knowledge of all relevant information, the Company records a tax benefit. For those income tax positions that are not likely to be sustained, no tax benefit is recognized in the consolidated financial statements. The Company recognizes interest and penalties related to uncertain tax positions as part of the provision for income taxes.

Foreign Currency Contracts

The Company uses foreign currency contracts as a part of its strategy to limit its exposures related to foreign currency denominated monetary assets and liabilities. The time duration of these foreign currency contracts approximates the underlying foreign currency transaction exposures, generally less than three months. These contracts are not designated as cash flow, fair value or net investment hedges. Changes in the fair value of these foreign currency contracts are recognized in income before income taxes.

Recent Accounting Pronouncements

The following table provides a brief description of recent Accounting Standards Updates ("ASU") issued by the Financial Accounting Standards Board ("FASB"):

Standard	Description	Effective Date	Effect on the Financial Statements or Other Significant Matters
In December 2019, the FASB issued ASU 2019-12, "Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes."	ASU 2019-12 simplifies the accounting for income taxes by removing certain exceptions to the general principles of ASC 740, including (i) the exception to the incremental approach for intraperiod tax allocation when there is a loss from continuing operations and income or a gain from other items; (ii) the exception to the requirement to recognize a deferred tax liability for equity method investments when a foreign subsidiary becomes an equity method investment (or vice-versa); and (iii) the exception for calculating income taxes in an interim period when a year-to-date loss exceeds the anticipated loss for the year. ASU 2019-12 also simplifies GAAP for other areas of ASC 740 by clarifying and amending the existing guidance.	January 1, 2021. Early adoption is permitted.	The adoption of ASU 2019-12 is not expected to have a material impact on the Company's consolidated financial statements.

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Standard	Description	Effective Date	Effect on the Financial Statements or Other Significant Matters
In June 2016, the FASB issued ASU 2016-13, "Financial Instruments – Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments."	ASU 2016-13 requires the measurement of all expected credit losses of financial assets held at the reporting date based on historical experience, current conditions, and reasonable and supportable forecasts. Financial institutions and other organizations will now use forward looking information to better inform their credit loss estimates.	January 1, 2020.	The Company adopted ASU 2016-13 during the first quarter of 2020. The adoption of ASU 2016-13 did not have a material impact on the Company's consolidated financial statements.
In March 2020, the FASB issued ASU 2020-04, "Reference rate reform (Topic 848): Facilitation of the effects of reference rate reform on financial reporting."	ASU 2020-04 provides optional expedients and exceptions for applying GAAP to contracts, hedging relationships, and other transactions affected by reference rate reform if certain criteria are met.	Upon issuance. Adoption of ASU 2020-04 is elective.	The Company does not expect the impact of ASU 2020-04 to be material to its consolidated financial statements.
In August 2018, the FASB issued ASU 2018-14, "Compensation - retirement benefits - defined benefit plans – General (Subtopic 715-20): Disclosure framework – Change to the disclosure requirements for defined benefit plans."	ASU 2018-14 provides minor changes to the disclosure requirements for employers that sponsor defined benefit pension and/or other postretirement benefit plans.	Fiscal years ending after December 15, 2020	The Company adopted ASU 2018-14 during the fourth quarter of 2020. The adoption of this standard did not have a material impact on the Company's financial statements.

3. Revenue

In May 2014, the FASB issued ASU 2014-09, "Revenue from Contracts with Customers (Topic 606)." ASU 2014-09 supersedes the revenue recognition requirements in ASC Topic 605, "Revenue Recognition," and requires entities to recognize revenue in a way that depicts the transfer of goods or services to customers at an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. The Company adopted ASU 2014-09 during the first quarter of 2018 using the modified retrospective method. ASU 2014-09 has been applied to those contracts which had not been completed as of January 1, 2018 and all new contracts entered into by the Company subsequent to January 1, 2018. The adoption of ASU 2014-09 did not have an impact on the Company's accumulated deficit.

The Company recognizes revenue when control of promised goods or services is transferred to the customer. The transfer of control generally occurs upon shipment when title and risk of loss pass to the customer. The vast majority of the Company's revenue is generated from the sale of distinct products. Revenue is measured as the amount of consideration the Company expects to receive in exchange for such products, which is generally at contractually stated prices. Sales taxes and value added taxes collected concurrently with revenue generating activities are excluded from revenue.

Performance Obligations

Substantially all of the Company's revenue is recognized at a point in time, upon shipment, rather than over time.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
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At the request of its customers, the Company may perform professional services, generally for the maintenance and repair of products previously sold to those customers and for engineering services. Professional services are typically short in duration, mostly less than one month, and aggregate to less than 3% of the Company's consolidated revenue. Revenue is typically recognized at a point in time when control transfers to the customer upon completion of professional services. These services generally involve a single distinct performance obligation. The consideration expected to be received in exchange for such services is normally the contractually stated amount.

The Company occasionally sells separately priced non-standard/extended warranty services or preventative maintenance plans with the sale of products. The transfer of control over the service plans is over time. The Company recognizes the related revenue ratably over the terms of the service plans. The transaction price of a contract is allocated to each performance obligation based on its relative standalone selling price. Standalone selling prices are generally determined based on the prices charged to customers or using the expected cost plus a margin.

Shipping & Handling Costs

The Company accounts for shipping and handling activities that occur after the transfer of control over the related goods as fulfillment activities rather than performance obligations. The shipping and handling fees charged to customers are recognized as revenue and the related costs are recorded in cost of revenue at the time of transfer of control.

Warranties

The Company generally provides warranties for its products. The standard warranty period is typically 12 months to 24 months for the Photonics and Precision Motion segments and 12 months to 36 months for the Vision segment. The standard warranty period for product sales is accounted for under the provisions of ASC 450, "Contingencies," as the Company has the ability to ascertain the likelihood of the liability and can reasonably estimate the amount of the liability. A provision for the estimated warranty cost is recorded in cost of revenue at the time revenue is recognized. The Company's estimate of costs to service the warranty obligations is based on historical experience and expectations of future conditions. To the extent that the Company's experience in warranty claims or costs associated with servicing those claims differ from the original estimates, revisions to the estimated warranty liability are recorded at that time, with an offsetting adjustment to cost of revenue.

Practical Expedients and Exemptions

The Company expenses incremental direct costs of obtaining a contract when incurred if the expected amortization period is one year or less. These costs are recorded within selling, general and administrative expenses in the consolidated statement of operations.

The Company does not adjust the promised amount of consideration for the effects of a financing component because the time period between the transfer of a promised good to a customer and the customer's payment for that good is typically one year or less. The Company does not disclose the value of the remaining performance obligation for contracts with an original expected length of one year or less.

Contract Liabilities

Contract liabilities consist of deferred revenue and advance payments from customers, including amounts that are refundable. These contract liabilities are classified as either current or long-term liabilities in the consolidated balance sheet based on the timing of when the Company expects to recognize the related revenue. As of December 31, 2020 and December 31, 2019, contract liabilities were \$6.5 million and \$3.6 million, respectively, and are included in accrued expenses and other current liabilities and other liabilities in the accompanying consolidated balance sheets. The increase in the contract liability balance during the year ended December 31, 2020 is primarily due to cash payments received in advance of satisfying performance obligations offset by \$3.3 million of revenue recognized during the year that was included in the contract liability balance at December 31, 2019.

Disaggregated Revenue

See Note 18 for the Company's disaggregation of revenue by segment, geography and end market.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
AS OF DECEMBER 31, 2020

4. Business Combinations**2019 Acquisitions**

On July 31, 2019, the Company acquired 100% of the outstanding shares of ARGES GmbH (“ARGES”), a Wackersdorf, Germany-based manufacturer of innovative laser scanning subsystems used in industrial materials processing and medical applications, for a total purchase price of €65.7 million (\$73.2 million), including net working capital adjustments. The purchase price consists of €24.0 million (\$26.7 million) cash paid at closing, 124 thousand Novanta common shares issued at closing (with a fair market value of €9.8 million, or \$10.9 million, based on the closing market price of \$87.58 per share on July 30, 2019), €7.1 million (\$7.9 million) estimated fair value of contingent consideration and €24.8 million (\$27.7 million) deferred cash consideration. The initial cash purchase price was financed with borrowings under the Company’s revolving credit facility. The contingent consideration will be payable annually based on actual revenue achievement against certain revenue targets from August 2019 through December 2026, with the first payment due in the first quarter of 2021. The undiscounted range of contingent consideration is zero to €10.0 million. In 2020, the Company paid €25.0 million to the former owner of ARGES in deferred cash consideration and to settle working capital. The addition of ARGES complements and expands the Company’s existing portfolio of lasers and laser beam steering solutions capabilities within the Photonics reportable segment.

On June 5, 2019, the Company acquired 100% of the outstanding stock of Med X Change, Inc. (“Med X Change”), a Bradenton, Florida-based provider of medical grade, high definition and 4K video recording and documentation solutions to OEMs in the medical market. The purchase price of \$21.9 million, net of working capital adjustments, was financed with cash on hand and a \$21.0 million borrowing under the Company’s revolving credit facility. The addition of Med X Change complements and broadens the range of technology capabilities within the Company’s Vision reportable segment by providing its medical OEM customers with more integrated operating room solutions.

On April 16, 2019, the Company acquired 100% of the outstanding stock of Ingenia-CAT, S.L. (“Ingenia”), a Barcelona, Spain-based provider of high-performance servo drives and control software to OEMs in the medical and advanced industrial markets, for a total purchase price of €14.3 million (\$16.2 million), net of working capital adjustments. The purchase price consists of €8.5 million (\$9.6 million) cash consideration and €5.8 million (\$6.6 million) estimated fair value of contingent consideration. The initial cash purchase price was financed with cash on hand and borrowings under the Company’s revolving credit facility. The contingent consideration will be payable annually based on actual revenue achievement against certain revenue targets from April 2019 through March 2022, with the first payment due in the second quarter of 2020. The undiscounted range of contingent consideration is zero to €8.0 million. The Ingenia purchase and sale agreement requires €0.8 million (\$0.9 million) of the purchase price to be held back by the Company for indemnification of certain representations and warranties claims by the Company until the expiration of the holdback agreement in October 2020. The Company released the indemnification holdback in the fourth quarter of 2020. The addition of Ingenia enhances the Company’s strategic position in precision motion control industry by enabling it to offer a broader range of motion control technologies and integrated solutions. Ingenia is included in the Company’s Precision Motion reportable segment.

The acquisitions of ARGES, Med X Change and Ingenia have been accounted for as business combinations. Purchase price allocation is based upon a valuation of assets acquired and liabilities assumed. Assets acquired and liabilities assumed have been recorded at their estimated fair values as of the acquisition dates. The fair values of intangible assets were based on valuation techniques with estimates and assumptions developed by management. The process for estimating the fair values of identifiable intangible assets requires the use of significant estimates and assumptions, including revenue growth rates, customer attrition rates, royalty rates, discount rates and projected future cash flows. The excess of the purchase price over the tangible assets, identifiable intangible assets and assumed liabilities was recorded as goodwill.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
AS OF DECEMBER 31, 2020

ARGES

The final purchase price for ARGES was allocated as follows (in thousands):

	Amount
Cash	\$ 3,159
Accounts receivable	1,430
Inventories	7,129
Property, plant and equipment	14,095
Intangible assets	24,713
Goodwill	42,951
Other assets	2,244
Total assets acquired	95,721
Accounts payable	2,598
Deferred tax liabilities	5,510
Other liabilities	14,462
Total liabilities assumed	22,570
Total assets acquired, net of liabilities assumed	73,151
Less: cash acquired	3,159
Total purchase price, net of cash acquired	69,992
Less: contingent consideration	7,870
Less: issuance of common shares	10,900
Less: deferred cash consideration	27,664
Initial cash purchase price, net of cash acquired	\$ 23,558

The fair value of intangible assets for ARGES is comprised of the following (dollar amounts in thousands):

	Estimated Fair Value	Weighted Average Amortization Period
Developed technologies	\$ 11,355	15 years
Customer relationships	11,800	15 years
Trademarks and trade names	1,225	10 years
Backlog	333	5 months
Total	\$ 24,713	

Customer relationships and backlog for ARGES were valued using the multi-period excess earnings method. Developed technology and trademarks and trade names for ARGES were valued using the relief-from-royalty method.

The purchase price allocation resulted in \$24.7 million of identifiable intangible assets and \$43.0 million of goodwill. As the ARGES acquisition was an acquisition of outstanding common shares, none of the resulting goodwill is expected to be deductible for income tax purposes. Intangible assets are being amortized over their weighted average useful lives primarily based upon the pattern in which anticipated economic benefits from such assets are expected to be realized. The goodwill recorded represents the anticipated incremental value of future cash flows potentially attributable to: (i) expected future benefits from advancing the Company's photonic-based product roadmap through the addition of R&D capabilities from ARGES; (ii) ARGES's ability to grow the business with existing and new customers, including leveraging the Company's customer base; (iii) ARGES's ability to grow the business through new product introductions; and (iv) cost improvements due to the integration of ARGES's operations into the Company's existing infrastructure.

The operating results of ARGES were included in the Company's results of operations beginning on July 31, 2019. ARGES contributed revenues of \$4.9 million and a loss before income taxes of \$3.5 million for the year ended December 31, 2019. Loss before income taxes for the year ended December 31, 2019 included amortization of inventory fair value adjustments and purchased intangible assets of \$2.2 million.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
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The pro forma financial information reflecting the operating results of ARGES, as if it had been acquired as of January 1, 2018, would not differ materially from the operating results of the Company as reported for the year ended December 31, 2018.

Med X Change and Ingenia

The final purchase price allocation for Med X Change and Ingenia is as follows (in thousands):

	Amount
Cash	\$ 1,000
Accounts receivable	1,739
Inventories	2,372
Property, plant and equipment	496
Intangible assets	22,376
Goodwill	13,388
Other assets	601
Total assets acquired	41,972
Accounts payable	604
Deferred tax liabilities	2,399
Other liabilities	910
Total liabilities assumed	3,913
Total assets acquired, net of liabilities assumed	38,059
Less: cash acquired	1,000
Total purchase price, net of cash acquired	37,059
Less: contingent consideration	6,569
Less: purchase price holdback	905
Net cash used for acquisition of businesses	\$ 29,585

The fair value of intangible assets for Med X Change and Ingenia is comprised of the following (dollar amounts in thousands):

	Estimated Fair Value		Weighted Average Amortization Period
	Med X Change	Ingenia	
Developed technologies	\$ 1,800	\$ 9,272	10 years
Customer relationships	9,900	565	15 years
Trademarks and trade names	300	339	9 years
Backlog	200	—	7 months
Total	\$ 12,200	\$ 10,176	

Customer relationships and backlog for both Med X Change and Ingenia were valued using the multi-period excess earnings method. Developed technology for Med X Change and Ingenia were valued using the relief from royalty and multi-period excess earnings methods, respectively. Trademarks and trade names for both Med X Change and Ingenia were valued using the relief-from-royalty method.

The Company recorded an aggregate fair value of \$22.4 million of identifiable intangible assets from the Med X Change and Ingenia acquisitions. Intangible assets are being amortized over their weighted average useful lives primarily based upon the pattern in which anticipated economic benefits from such assets are expected to be realized.

The Company recorded \$13.4 million of goodwill from these acquisitions. Goodwill amounting to \$6.2 million from the Med X Change acquisition is expected to be fully deductible for income tax purposes. Goodwill amounting to \$7.2 million from the Ingenia acquisition is not expected to be deductible for income tax purposes. The goodwill recorded represents the anticipated incremental value of future cash flows potentially attributable to: (i) the ability of Med X Change and Ingenia to grow the business with existing and new customers, including leveraging the Company's customer base; (ii) their ability to grow the businesses

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
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through new product introductions; and (iii) cost improvements due to the integration of Med X Change and Ingenia operations into the Company's existing infrastructure.

The operating results of Med X Change and Ingenia were included in the Company's results of operations beginning on the respective acquisition dates. These acquisitions contributed revenues of \$7.9 million and an income before income taxes of \$0.6 million for the year ended December 31, 2019. Income before income taxes for the year ended December 31, 2019 included amortization of inventory fair value adjustments and purchased intangible assets of \$1.5 million.

The pro forma financial information reflecting the operating results of Med X Change and Ingenia, as if they had been acquired as of January 1, 2018, would not differ materially from the operating results of the Company as reported for the year ended December 31, 2018.

2018 Acquisitions

During the year ended December 31, 2018, the Company acquired two businesses for total cash considerations of \$33.5 million, including the acquisition of Zettlex Holdings Limited ("Zettlex"). The consolidated statement of operations includes the operating results of the businesses from the dates of acquisition.

Zettlex

On May 1, 2018, the Company acquired 100% of the outstanding stock of Zettlex, a Cambridge, United Kingdom-based provider of inductive encoder products that provide absolute and accurate positioning, even in extreme operating environments, to OEMs in the medical and advanced industrial markets. The purchase price of £23.3 million (\$32.0 million), net of working capital adjustments, was financed with cash on hand and borrowings under the Company's revolving credit facility.

The final purchase price allocation is as follows (in thousands):

	Amount
Cash	\$ 3,776
Accounts receivable	2,237
Inventories	928
Property, plant and equipment	2,590
Intangible assets	14,585
Goodwill	11,790
Other assets	145
Total assets acquired	<u>36,051</u>
Accounts payable	509
Accrued expenses and other liabilities	1,035
Deferred tax liabilities	2,481
Total liabilities assumed	<u>4,025</u>
Total assets acquired, net of liabilities assumed	32,026
Less: cash acquired	3,776
Total purchase price, net of cash acquired	<u>\$ 28,250</u>

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The fair value of intangible assets is comprised of the following (dollar amounts in thousands):

	Estimated Fair Value	Weighted Average Amortization Period
Developed technologies	\$ 3,027	10 years
Customer relationships	9,494	15 years
Trademarks and trade names	550	10 years
Backlog	1,514	1 year
Total	\$ 14,585	

The purchase price allocation resulted in \$14.6 million of identifiable intangible assets and \$11.8 million of goodwill. As the Zettlex acquisition was an acquisition of outstanding common shares, none of the resulting goodwill is deductible for income tax purposes. Intangible assets are being amortized over their weighted average useful lives primarily based upon the pattern in which anticipated economic benefits from such assets are expected to be realized. The goodwill recorded represents the anticipated incremental value of future cash flows potentially attributable to: (i) Zettlex's ability to grow its business with existing and new customers, including leveraging the Company's customer base; and (ii) cost improvements due to the integration of Zettlex operations into the Company's existing infrastructure.

The operating results of Zettlex were included in the Company's results of operations beginning on May 1, 2018. Zettlex contributed revenues of \$8.3 million and a loss before income taxes of \$1.8 million for the year ended December 31, 2018. Loss before income taxes for the year ended December 31, 2018 included amortization of purchased intangible assets of \$1.3 million and compensation expense of \$4.4 million recognized under earn-out agreements. Zettlex is included in the Company's Precision Motion reportable segment.

Acquisition Costs

The Company did not consummate an acquisition during 2020. The Company recognized acquisition costs of \$1.6 million and \$1.1 million in the years ended December 31, 2019 and 2018, respectively, related to the acquisitions that occurred during these years. These costs consisted of finders' fees, legal, valuation and other professional or consulting fees. These amounts were included in restructuring and acquisition related costs in the consolidated statements of operations.

5. Accumulated Other Comprehensive Loss

Other comprehensive income (loss) is defined as other changes in stockholders' equity that do not represent transactions with stockholders or in the Company's stock. Changes in accumulated other comprehensive loss were as follows (in thousands):

	Total Accumulated Other Comprehensive Income (Loss)	Cumulative Translation Adjustments	Pension Liability Adjustments
Balance at December 31, 2017	\$ (17,880)	\$ (8,313)	\$ (9,567)
Other comprehensive income (loss)	(5,473)	(4,172)	(1,301)
Amounts reclassified from accumulated other comprehensive loss (1)	826	—	826
Balance at December 31, 2018	(22,527)	(12,485)	(10,042)
Other comprehensive income (loss)	3,428	3,267	161
Amounts reclassified from accumulated other comprehensive loss (1)	986	—	986
Balance at December 31, 2019	(18,113)	(9,218)	(8,895)
Other comprehensive income (loss)	5,157	6,922	(1,765)
Amounts reclassified from accumulated other comprehensive loss (1)	715	—	715
Balance at December 31, 2020	\$ (12,241)	\$ (2,296)	\$ (9,945)

(1)

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
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The amounts reclassified from accumulated other comprehensive loss were included in other income (expense) in the consolidated statements of operations.

6. Goodwill, Intangible Assets and Impairment Charges

Goodwill

The following table summarizes changes in goodwill during the year ended December 31, 2020 (in thousands):

	December 31, 2020
Balance at beginning of year	\$ 274,710
Goodwill adjustment from acquisitions	(93)
Effect of foreign exchange rate changes	11,363
Balance at end of year	<u>\$ 285,980</u>

Goodwill by reportable segment as of December 31, 2020 was as follows (in thousands):

	Reportable Segment			
	Photonics	Vision	Precision Motion	Total
Goodwill	\$ 218,517	\$ 165,195	\$ 53,497	\$ 437,209
Accumulated impairment of goodwill	(102,461)	(31,722)	(17,046)	(151,229)
Total	<u>\$ 116,056</u>	<u>\$ 133,473</u>	<u>\$ 36,451</u>	<u>\$ 285,980</u>

Goodwill by reportable segment as of December 31, 2019 was as follows (in thousands):

	Reportable Segment			
	Photonics	Vision	Precision Motion	Total
Goodwill	\$ 213,413	\$ 160,086	\$ 52,440	\$ 425,939
Accumulated impairment of goodwill	(102,461)	(31,722)	(17,046)	(151,229)
Total	<u>\$ 110,952</u>	<u>\$ 128,364</u>	<u>\$ 35,394</u>	<u>\$ 274,710</u>

Intangible Assets

Intangible assets as of December 31, 2020 and 2019, respectively, are summarized as follows (dollar amounts in thousands):

	December 31, 2020			
	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount	Weighted Average Remaining Life (Years)
Amortizable intangible assets:				
Patents and developed technologies	\$ 164,430	\$ (110,572)	\$ 53,858	8.8
Customer relationships	167,429	(92,892)	74,537	10.9
Trademarks and trade names	18,367	(11,268)	7,099	7.8
Amortizable intangible assets	<u>350,226</u>	<u>(214,732)</u>	<u>135,494</u>	9.9
Non-amortizable intangible assets:				
Trade names	13,027	—	13,027	
Total	<u>\$ 363,253</u>	<u>\$ (214,732)</u>	<u>\$ 148,521</u>	

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	December 31, 2019			
	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount	Weighted Average Remaining Life (Years)
Amortizable intangible assets:				
Patents and developed technologies	\$ 159,217	\$ (97,523)	\$ 61,694	9.5
Customer relationships	161,807	(78,206)	83,601	11.9
Customer backlog	2,316	(2,316)	—	—
Trademarks and trade names	17,871	(10,018)	7,853	8.6
Amortizable intangible assets	341,211	(188,063)	153,148	10.7
Non-amortizable intangible assets:				
Trade names	13,027	—	13,027	
Total	\$ 354,238	\$ (188,063)	\$ 166,175	

All definite-lived intangible assets are amortized either on a straight-line basis or an economic benefit basis over their remaining estimated useful life. Amortization expense for patents and developed technologies is included in cost of revenue in the accompanying consolidated statements of operations. Amortization expense for customer relationships and definite-lived trademarks, trade names and other intangibles is included in operating expenses in the accompanying consolidated statements of operations. Amortization expense was as follows (in thousands):

	Year Ended December 31,		
	2020	2019	2018
Amortization expense – cost of revenue	\$ 11,123	\$ 10,588	\$ 10,060
Amortization expense – operating expenses	13,970	15,857	15,550
Total amortization expense	\$ 25,093	\$ 26,445	\$ 25,610

Estimated future amortization expense for each of the five succeeding years and thereafter is as follows (in thousands):

Year Ending December 31,	Cost of Revenue	Operating Expenses	Total
2021	\$ 11,998	\$ 14,376	\$ 26,374
2022	10,274	13,535	23,809
2023	9,033	11,777	20,810
2024	6,752	9,738	16,490
2025	5,273	8,105	13,378
Thereafter	10,528	24,105	34,633
Total	\$ 53,858	\$ 81,636	\$ 135,494

Impairment Charges

The Company did not have any goodwill or indefinite-lived intangible asset impairment charges during 2020, 2019 or 2018.

7. Fair Value Measurements

ASC 820, "Fair Value Measurement," establishes a fair value hierarchy based on three levels of inputs, of which the first two are considered observable and the third is considered unobservable:

Level 1: Quoted prices for identical assets or liabilities in active markets which the Company can access

Level 2: Observable inputs other than those described in Level 1

Level 3: Unobservable inputs

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
AS OF DECEMBER 31, 2020

Current Assets and Liabilities

The Company's cash equivalents are highly liquid investments with original maturities of three months or less, which represent an asset the Company measures at fair value on a recurring basis. The Company determines the fair value of cash equivalents using a market approach based on quoted prices in active markets. The fair values of cash equivalents, accounts receivable, income taxes receivable, accounts payable, income taxes payable and accrued expenses and other current liabilities approximate their carrying values because of their short-term nature.

Foreign Currency Contracts

The Company addresses market risks from changes in foreign currency exchange rates through a risk management program that includes the use of derivative financial instruments to mitigate certain balance sheet foreign currency transaction exposures. The Company uses foreign currency forward contracts as a part of its strategy to manage exposures related to foreign currency denominated monetary assets and liabilities.

Contingent Considerations

On July 31, 2019, the Company acquired ARGES. Under the purchase and sale agreement for the ARGES acquisition, the former owner of ARGES is eligible to receive contingent consideration based on the achievement of certain revenue targets by the Company from August 2019 through December 2026. The undiscounted range of possible contingent consideration is zero to €10.0 million (\$11.1 million). If the revenue targets are achieved, the contingent consideration would be payable annually with the first payment due in the first quarter of 2021. The estimated fair value of the contingent consideration of €7.1 million (\$7.9 million) was determined based on the Monte Carlo valuation method and was recorded as part of the purchase price as of the acquisition date. Subsequent changes in the estimated fair value of the contingent consideration liability are recorded in the consolidated statement of operations in restructuring and acquisition related costs until the liability is fully settled. Based on revenue performance through December 31, 2020 and the most recent revenue projections for fiscal years 2021 to 2026, the fair value of the contingent consideration was adjusted to €4.1 million (\$5.1 million), of which €0.4 million (\$0.4 million) is expected to be paid in the first quarter of 2021 and is recorded in accrued expenses and other current liabilities. The remaining fair value is reported as a long-term liability in other liabilities on the consolidated balance sheet as of December 31, 2020.

On April 16, 2019, the Company acquired Ingenia. Under the purchase and sale agreement for the Ingenia acquisition, the former shareholders of Ingenia are eligible to receive contingent consideration based on the achievement of certain revenue targets by the Company from April 2019 through March 2022. The undiscounted range of possible contingent consideration is zero to €8.0 million (\$9.0 million). If the revenue targets are achieved, the contingent consideration would be payable in three annual installments from 2020 to 2022. The estimated fair value of the contingent consideration of €5.8 million (\$6.6 million) as of the acquisition date was determined based on the Monte Carlo valuation method and was recorded as part of the purchase price as of the acquisition date. Subsequent changes in the estimated fair value of the contingent consideration liability are recorded in the consolidated statement of operations in restructuring and acquisition related costs until the liability is fully settled. The first payment of €1.0 million (\$1.1 million) was made in the second quarter of 2020. Based on revenue performance through December 31, 2020 and the most recent revenue projections for fiscal years 2021 to 2022, the fair value of the remaining contingent consideration was adjusted to €2.3 million (\$2.9 million), of which €1.3 million (\$1.6 million) is expected to be paid in the second quarter of 2021 and is recorded in accrued expenses and other current liabilities. The remaining fair value is reported as a long-term liability in other liabilities on the consolidated balance sheet as of December 31, 2020.

On December 14, 2016, the Company acquired certain video signal processing and management technologies used in medical visualization solutions. Under the purchase and sale agreement, the owners are eligible to receive contingent consideration based on the achievement of certain revenue targets by the Company from 2018 to 2021 from products utilizing the acquired technologies. The undiscounted range of possible contingent consideration is zero to €5.5 million (\$6.6 million). If the revenue targets are achieved, the contingent consideration would be payable in four installments from 2019 to 2022. As the acquired assets did not meet the definition of a business, the fair value of the contingent consideration is recognized when probable and estimable and is capitalized as part of the cost of the acquired assets. Subsequent changes in the estimated fair value of this contingent liability are recorded as adjustments to the carrying value of the asset acquired and amortized over the remaining useful life of the underlying assets. The first payment of €2.4 million (\$2.6 million) was made in the first quarter of 2020. Based on revenue performance as of December 31, 2020 and the most recent revenue projections for fiscal year 2021, the fair value of the remaining contingent consideration was adjusted to €2.9 million (\$3.6 million), of which €1.9 million (\$2.3 million) will be paid in the first quarter of

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
AS OF DECEMBER 31, 2020

2021 and is reported in accrued expenses and other current liabilities. The remaining fair value is reported as a long-term liability in other liabilities on the consolidated balance sheet as of December 31, 2020.

The following table summarizes the fair values of the Company's assets and liabilities measured at fair value on a recurring basis as of December 31, 2020 (in thousands):

	Fair Value	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Other Unobservable Inputs (Level 3)
Assets				
Cash equivalents	\$ 11,047	\$ 11,047	\$ —	\$ —
Prepaid expenses and other current assets:				
Foreign currency forward contracts	27	—	27	—
	<u>\$ 11,074</u>	<u>\$ 11,047</u>	<u>\$ 27</u>	<u>\$ —</u>
Liabilities				
Accrued expenses and other current liabilities:				
Contingent considerations - Current	\$ 4,280	\$ —	\$ —	\$ 4,280
Foreign currency forward contracts	—	—	—	—
Other liabilities:				
Contingent considerations - Long-term	7,276	—	—	7,276
	<u>\$ 11,556</u>	<u>\$ —</u>	<u>\$ —</u>	<u>\$ 11,556</u>

The following table summarizes the fair values of the Company's assets and liabilities measured at fair value on a recurring basis as of December 31, 2019 (in thousands):

	Fair Value	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Other Unobservable Inputs (Level 3)
Assets				
Cash equivalents	\$ 9,262	\$ 9,262	\$ —	\$ —
Prepaid expenses and other current assets:				
Foreign currency forward contracts	50	—	50	—
	<u>\$ 9,312</u>	<u>\$ 9,262</u>	<u>\$ 50</u>	<u>\$ —</u>
Liabilities				
Accrued expenses and other current liabilities:				
Contingent considerations - Current	\$ 3,813	\$ —	\$ —	\$ 3,813
Foreign currency forward contracts	99	—	99	-
Other liabilities:				
Contingent considerations - Long-term	16,504	—	—	16,504
	<u>\$ 20,416</u>	<u>\$ —</u>	<u>\$ 99</u>	<u>\$ 20,317</u>

During the years ended December 31, 2020 and 2019, there were no transfers between fair value levels.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
AS OF DECEMBER 31, 2020

Changes in the fair value of Level 3 contingent considerations for the year ended December 31, 2020 were as follows (in thousands):

	Contingent Considerations	
Balance at December 31, 2019	\$	20,317
Fair value adjustments		(6,166)
Payments		(3,767)
Effect of foreign exchange rates		1,172
Balance at December 31, 2020	\$	11,556

The following table provides qualitative information associated with the fair value measurement of the Company's Level 3 liabilities:

Liability	December 31, 2020 Fair Value (in thousands)	Valuation Technique	Unobservable Inputs	Percentage Applied
Contingent consideration (ARGES)	\$5,086	Monte Carlo method	Historical and projected revenues from July 2019 through December 2026	N/A
			Revenue volatility	21.0%
			Cost of debt	2.6%
			Discount rate	3.7%
Contingent consideration (Ingenia)	\$2,871	Monte Carlo method	Historical and projected revenues from April 2019 through March 2022	N/A
			Revenue volatility	38.5%
			Cost of debt	3.1%
			Discount rate	9.6%
Contingent consideration (Other)	\$3,599	Discounted cash flow method	Historical and projected revenues for fiscal years 2018 to 2021	N/A
			Discount rate	22.8%

See Note 11 for a discussion of the estimated fair value of the Company's outstanding debt and Note 14 for a discussion of the estimated fair value of the Company's pension plan assets.

8. Foreign Currency Contracts

The Company addresses market risks from changes in foreign currency exchange rates through a risk management program that includes the use of derivative financial instruments to mitigate certain foreign currency transaction exposures from future settlement of non-functional currency monetary assets and liabilities as of the end of a period. The Company does not enter into derivative transactions for speculative purposes. Gains and losses on derivative financial instruments substantially offset losses and gains on the underlying hedged exposures. Furthermore, the Company manages its exposure to counterparty risks on derivative instruments by entering into contracts with a diversified group of major financial institutions and by actively monitoring outstanding positions.

As of December 31, 2020, the notional amount and fair value of the Company's foreign currency forward contracts was \$28.5 million and a net gain of less than \$0.1 million, respectively. As of December 31, 2019, the notional amount and fair value of the Company's foreign currency forward contracts was \$12.4 million and a net loss of less than \$0.1 million, respectively.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
AS OF DECEMBER 31, 2020

For the years ended December 31, 2020, 2019 and 2018, the Company recognized aggregate net gains of \$1.3 million, \$0.8 million and \$1.5 million, respectively, from the settlement of foreign currency forward contracts, which were included in foreign exchange transaction gains (losses) in the consolidated statements of operations.

9. Earnings per Common Share

Basic earnings per common share is computed by dividing net income attributable to Novanta Inc., after redeemable noncontrolling interest redemption value adjustment, if any, by the weighted average number of common shares outstanding during the year. Prior to the acquisition of the remaining noncontrolling interest in Laser Quantum in September 2018, the Company recognized changes in the redeemable noncontrolling interest redemption value by adjusting the carrying amount of the redeemable noncontrolling interest as of the end of the period to the higher of: (i) the estimated redemption value assuming the end of the period was also the redemption date or (ii) the carrying value without any redemption value adjustments. Such adjustments were recorded in retained earnings in stockholders' equity instead of net income attributable to Novanta Inc. However, for both basic and diluted earnings per common share, such redemption value adjustments were included in the calculation of the numerator for 2018.

For diluted earnings per common share, the denominator includes the dilutive effects of outstanding restricted stock units, stock options, total shareholder return performance-based restricted stock units and certain non-GAAP EPS performance-based restricted stock units, determined using the treasury stock method. The dilutive effects of market-based contingently issuable shares are included in the weighted average dilutive share calculation based on the number of shares, if any, that would be issuable as of the end of the reporting period assuming the end of the reporting period is also the end of the performance period. The dilutive effects of attainment-based contingently issuable shares granted to the former Laser Quantum noncontrolling interest shareholders and non-GAAP EPS performance-based restricted stock units are included in the weighted average dilutive share calculation after the performance targets have been achieved.

The following table sets forth the computation of basic and diluted earnings per common share (in thousands, except per share amounts):

	Year Ended December 31,		
	2020 ⁽¹⁾	2019 ⁽²⁾	2018 ⁽³⁾
Numerators:			
Consolidated net income	\$ 44,521	\$ 40,773	\$ 51,095
Less: Net income attributable to noncontrolling interest	—	—	(1,986)
Net income attributable to Novanta Inc.	44,521	40,773	49,109
Redeemable noncontrolling interest redemption value adjustment	—	—	1,781
Net income attributable to Novanta Inc. after adjustment for redeemable noncontrolling interest redemption value	\$ 44,521	\$ 40,773	\$ 50,890
Denominators:			
Weighted average common shares outstanding— basic	35,144	35,030	34,913
Dilutive potential common shares	510	516	560
Weighted average common shares outstanding— diluted	35,654	35,546	35,473
Antidilutive potential common shares excluded from above	13	41	4
Earnings per Common Share Attributable to Novanta Inc.:			
Basic	\$ 1.27	\$ 1.16	\$ 1.46
Diluted	\$ 1.25	\$ 1.15	\$ 1.43

(1) For the year ended December 31, 2020, 45 non-GAAP EPS performance-based restricted stock units granted to certain members of the executive management team and 213 shares of restricted stock issued to Laser Quantum former non-controlling interest shareholders are considered contingently issuable shares and were excluded from the calculation of the denominator as the contingent conditions had not been met as of December 31, 2020.

(2) For the year ended December 31, 2019, 46 non-GAAP EPS performance-based restricted stock units granted to certain members of the executive management team and 213 shares of restricted stock issued to Laser Quantum former non-controlling interest shareholders were considered contingently issuable shares and were excluded from the calculation of the denominator as the contingent conditions had not been met as of December 31, 2019.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
AS OF DECEMBER 31, 2020

- (3) For the year ended December 31, 2018, 54 non-GAAP EPS performance-based restricted stock units granted to certain members of the executive management team and 213 shares of restricted stock issued to Laser Quantum former non-controlling interest shareholders were considered contingently issuable shares and were excluded from the calculation of the denominator as the contingent conditions had not been met as of December 31, 2018.

10. Supplementary Balance Sheet Information

The following tables provide the details of selected balance sheet items as of the dates indicated (in thousands):

Inventories

	December 31,	
	2020	2019
Raw materials	\$ 55,657	\$ 76,268
Work-in-process	15,487	15,096
Finished goods	20,234	23,431
Demo and consigned inventory	1,359	1,823
Total inventories	<u>\$ 92,737</u>	<u>\$ 116,618</u>

Property, Plant and Equipment, Net

	December 31,	
	2020	2019
Cost:		
Land, buildings and improvements	\$ 71,341	\$ 67,376
Machinery and equipment	93,494	87,471
Total cost	164,835	154,847
Accumulated depreciation	(86,159)	(77,291)
Property, plant and equipment, net	<u>\$ 78,676</u>	<u>\$ 77,556</u>

The Company capitalized software development costs of less than \$0.1 million, \$0.2 million and \$1.1 million in 2020, 2019 and 2018, respectively, in accordance with the guidance in ASC 350-40, "Internal-Use Software."

The following table summarizes depreciation expense on property, plant and equipment, including demo units and assets under finance leases (in thousands):

	Year Ended December 31,		
	2020	2019	2018
Depreciation expense	<u>\$ 13,200</u>	<u>\$ 11,835</u>	<u>\$ 11,442</u>

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
AS OF DECEMBER 31, 2020

Accrued Expenses and Other Current Liabilities

The following table summarizes accrued expenses and other current liabilities as of the dates indicated (in thousands):

	December 31,	
	2020	2019
Accrued compensation and benefits	\$ 12,510	\$ 15,359
Contingent consideration and earn-outs	10,796	3,813
Finance lease obligations	9,720	1,307
Contract liabilities, current portion	6,173	3,219
Accrued warranty	4,919	5,756
Deferred purchase price for acquisitions	—	27,735
Other	9,662	13,137
Total	<u>\$ 53,780</u>	<u>\$ 70,326</u>

Accrued Warranty

The following table summarizes changes in accrued warranty for the periods indicated (in thousands):

	Year Ended December 31,		
	2020	2019	2018
Balance at beginning of year	\$ 5,756	\$ 4,510	\$ 4,835
Provision charged to cost of revenue	1,838	2,360	3,111
Warranty liabilities acquired from acquisitions	—	142	—
Use of provision	(2,805)	(1,282)	(3,341)
Foreign currency exchange rate changes	130	26	(95)
Balance at end of year	<u>\$ 4,919</u>	<u>\$ 5,756</u>	<u>\$ 4,510</u>

Other Long Term Liabilities

The following table summarizes other long term liabilities as of the dates indicated (in thousands):

	December 31,	
	2020	2019
Finance lease obligations	\$ 5,908	\$ 14,845
Accrued pension liabilities	1,511	1,473
Accrued contingent considerations and earn-outs	7,276	16,504
Other	2,471	4,065
Total	<u>\$ 17,166</u>	<u>\$ 36,887</u>

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
AS OF DECEMBER 31, 2020**11. Debt**

Debt consisted of the following (in thousands):

	December 31,	
	2020	2019
Senior Credit Facilities – term loan	\$ 5,545	\$ 5,073
Less: unamortized debt issuance costs	(37)	(42)
Total current portion of long-term debt	5,508	5,031
Senior Credit Facilities – term loan	99,534	96,095
Senior Credit Facilities – revolving credit facility	99,761	123,384
Less: unamortized debt issuance costs	(4,368)	(4,145)
Total long-term debt	194,927	215,334
Total Senior Credit Facilities	\$ 200,435	\$ 220,365

Senior Credit Facilities

On December 31, 2019, the Company entered into an amended and restated credit agreement (as amended, the “Third Amended and Restated Credit Agreement”) with existing lenders for an aggregate credit facility of \$450.0 million, originally consisting of a \$100.0 million U.S. dollar equivalent euro-denominated (approximately €90.2 million) 5-year term loan facility and a \$350.0 million 5-year revolving credit facility (collectively, the “Senior Credit Facilities”). The Senior Credit Facilities mature in December 2024. The Third Amended and Restated Credit Agreement amended and restated the Second Amended and Restated Credit Agreement dated as of May 19, 2016.

On March 27, 2020, the Company entered into an amendment (the “First Amendment”) to the Third Amended and Restated Credit Agreement and exercised a portion of the uncommitted accordion feature. The First Amendment increased the revolving credit facility commitment under the Third Amended and Restated Credit Agreement by \$145.0 million, from \$350.0 million to \$495.0 million and reset the uncommitted accordion feature to \$200.0 million for potential future expansion.

The borrowings outstanding under the Senior Credit Facilities bear interest at rates based on (a) the Base Rate, as defined in the Third Amended and Restated Credit Agreement, plus a margin ranging between 0.25% to 1.25% per annum, determined by reference to the Company’s consolidated leverage ratio, or (b) the Eurocurrency Rate, as defined in the Third Amended and Restated Credit Agreement, plus a margin ranging between 1.25% and 2.25% per annum, determined by reference to the Company’s consolidated leverage ratio. In addition, the Company is obligated to pay a commitment fee on the unused portion of the revolving credit facility, ranging between 0.20% and 0.40% per annum, determined by reference to the Company’s consolidated leverage ratio.

The Third Amended and Restated Credit Agreement contains various customary representations, warranties and covenants applicable to the Company and its subsidiaries, including, among others: (i) limitations on restricted payments, including dividend payments and stock repurchases, provided that the Company and its subsidiaries may repurchase their equity interests so long as, immediately after giving effect to the repurchase, the Company’s consolidated leverage ratio is no more than 3.25:1.00, with a step up to 3.75:1.00 for four consecutive quarters following an acquisition with an aggregate consideration greater than or equal to \$50.0 million, and the satisfaction of other customary conditions; (ii) limitations on fundamental changes involving the Company and its subsidiaries; (iii) limitations on the disposition of assets; and (iv) limitations on indebtedness, investments, and liens.

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
AS OF DECEMBER 31, 2020

The Third Amended and Restated Credit Agreement also requires the Company to satisfy certain financial covenants, such as maintaining a minimum consolidated fixed charge coverage ratio of 1.50:1.00 and a maximum consolidated leverage ratio of 3.50:1.00. The maximum consolidated leverage ratio will increase to 4.00:1.00 for four consecutive quarters following an acquisition with an aggregate consideration greater than or equal to \$50.0 million.

As of December 31, 2020, the outstanding principal under the Company's term loan facility is scheduled to be repaid as follows (in thousands):

	Principal Amount	
2021	\$	5,545
2022		5,545
2023		5,545
2024		88,444
Total debt repayments	\$	105,079

The outstanding principal balance under the term loan facility is payable in quarterly installments of €1.1 million beginning in March 2020, with the remaining balance due upon maturity. The Company may make additional principal payments at any time, which will reduce the next quarterly installment payment due. Borrowings under the revolving credit facility may be repaid at anytime through December 2024. The Company may be required to prepay outstanding loans under the Third Amended and Restated Credit Agreement with the net proceeds of certain asset dispositions and incurrences of certain debt. At the election of the Company, and so long as no default shall have occurred, the Company may reinvest all, or any portion, of the net proceeds from such asset dispositions or incurrences of debt within a year.

As of December 31, 2020, the Company had \$395.2 million available to be drawn under the revolving credit facility. Excluding commitment fees, the weighted average interest rate for the Senior Credit Facilities was approximately 1.53% as of December 31, 2020. The commitment fee rate for the unused commitments under the revolving credit facility was approximately 0.25% as of December 31, 2020.

Guarantees

The Senior Credit Facilities is guaranteed by Novanta Inc., Novanta Corporation, NDS Surgical Imaging LLC, Med X Change, Inc., Novanta Medical Technologies Corp., W.O.M. World of Medicine USA, Inc., Novanta Europe GmbH, Novanta UK Investments Holding Limited and Novanta Technologies UK Limited (collectively, "Guarantors"). Each Guarantor, jointly and severally, unconditionally guarantees the due and punctual payment of the principal, interest and fees under the Senior Credit Facilities, when due and payable, whether at maturity, by required prepayment, by acceleration or otherwise. In addition, Guarantors guarantee the due and punctual payment, fees and interest on the overdue principal of the Senior Credit Facilities and the due and punctual performance of all obligations of the Company in accordance with the terms of the Third Amended and Restated Credit Agreement. Furthermore, each Guarantor, jointly and severally, unconditionally guarantees that in the event of any extension, renewal, amendment, refinancing or modification of any of the Senior Credit Facilities, amounts due will be promptly paid in full when due in accordance with the terms of the extension or renewal, at stated maturity, by acceleration or otherwise.

The obligations of each Guarantor are limited to the maximum amount, after giving effect to all other contingent and fixed liabilities or any collections from, or payments made by or on behalf of, any other Guarantor. Each Guarantor that makes a payment or distribution under a Guarantee is entitled to a contribution from each other Guarantor of its pro rata share based on the adjusted net assets of each Guarantor. If at any time any payment of any of the obligations of the Guarantors is rescinded or must otherwise be returned upon the insolvency, bankruptcy or reorganization of the Company, a Guarantor or otherwise, the Guarantees will continue to be effective or be reinstated, as the case may be, as though such payment had not been made.

Each Guarantor may be released from its obligations under its respective Guarantee and its obligations under the Third Amended and Restated Credit Agreement upon the occurrence of certain events, including, but not limited to: (i) the Guarantor ceasing to be a subsidiary; or (ii) payment in full of the principal and accrued and unpaid interest on the Senior Credit Facilities and all other obligations.

The maximum potential amount of future payments the Guarantors could be required to make under the Guarantee is the principal amount of the Senior Credit Facilities plus all accrued and unpaid interest thereon. However, as of December 31, 2020, the Guarantors were not expected to be required to perform under the Guarantee.

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AS OF DECEMBER 31, 2020

Liens

The Company's obligations under the Senior Credit Facilities are secured, on a senior basis, by a lien on substantially all of the assets of Novanta Inc. The Third Amended and Restated Credit Agreement also contains customary events of default.

Deferred Financing Costs

In connection with the execution of the Third Amended and Restated Credit Agreement and the First Amendment, the Company capitalized an additional \$4.3 million of deferred financing costs. The Company allocated these costs between the term loan and the revolving credit facility based on the maximum borrowing capacity and amortizes the costs on a straight-line basis over the term of the Senior Credit Facilities. Previously unamortized deferred financing costs will continue to be amortized. Non-cash interest expense related to the amortization of the deferred financing costs was \$1.0 million, \$1.1 million and \$1.0 million in 2020, 2019 and 2018, respectively. Unamortized deferred financing costs are presented as a reduction to the debt balances on the consolidated balance sheets.

Fair Value of Debt

As of December 31, 2020 and 2019, the outstanding balance of the Company's debt approximated its fair value based on current rates available to the Company for debt of the same maturities. The fair value of the Company's debt is classified as Level 2 under the fair value hierarchy.

12. Leases

Most leases held by the Company expire between 2021 and 2034. In the U.K., where longer lease terms are more common, the Company has a land lease that extends through 2078. Certain leases include terms such as an option to purchase the property, one or more options to renew, with renewal terms that can extend the lease term from one to 10 years, and options to terminate the leases within one year. The exercise of lease renewal or termination option is at the Company's sole discretion; therefore, the majority of renewals to extend the lease terms are not included in the Company's right-of-use assets and operating lease liabilities as they are not reasonably certain of being exercised. The Company regularly evaluates the renewal options and includes the renewal periods in the lease term when they are reasonably certain of being exercised. The depreciable life of right-of-use assets and leasehold improvements is limited to the expected lease terms.

The following table summarizes the components of lease costs (in thousands):

	Year Ended December 31,	
	2020	2019
Operating lease cost	\$ 7,693	\$ 7,638
Finance lease cost		
Amortization of right-of-use assets	989	831
Interest on lease liabilities	432	430
Variable lease cost	1,336	1,329
Total lease cost	\$ 10,450	\$ 10,228

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The following table provides the details of balance sheet information related to leases as of the date indicated (in thousands, except lease term and discount rate):

	December 31,	
	2020	2019
Operating leases		
Operating lease right-of-use assets	\$ 34,444	\$ 35,180
Current portion of operating lease liabilities	\$ 6,188	\$ 5,043
Operating lease liabilities	32,802	34,108
Total operating lease liabilities	\$ 38,990	\$ 39,151
Finance leases		
Property, plant and equipment, gross	\$ 19,819	\$ 19,748
Accumulated depreciation	(4,934)	(4,649)
Finance lease assets included in property, plant and equipment, net	\$ 14,885	\$ 15,099
Accrued expenses and other current liabilities	\$ 9,720	\$ 1,307
Other liabilities	5,908	14,845
Total finance lease liabilities	\$ 15,628	\$ 16,152
Weighted-average remaining lease term (in years)		
Operating leases	9.3	10.2
Finance leases	3.5	4.7
Weighted-average discount rate		
Operating leases	5.50%	5.60%
Finance leases	3.00%	3.09%

The following table provides the details of cash flow information related to leases (in thousands):

	Year Ended December 31,	
	2020	2019
Cash paid for amounts included in lease liabilities:		
Operating cash flows from finance leases	\$ 432	\$ 430
Operating cash flows from operating leases	\$ 6,760	\$ 7,768
Financing cash flows from finance leases	\$ 1,321	\$ 868
Supplemental non-cash information:		
Right-of-use assets obtained in exchange for new operating lease liabilities	\$ 4,290	\$ 7,723
Right-of-use assets obtained in exchange for new finance lease liabilities	\$ -	\$ 9,209

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
AS OF DECEMBER 31, 2020

Future minimum lease payments under operating and finance leases expiring subsequent to December 31, 2020, including operating leases associated with facilities that have been vacated as a result of the Company's restructuring actions, are summarized as follows (in thousands):

Year Ended December 31,	Operating Leases	Finance Leases⁽¹⁾
2021	\$ 7,297	\$ 10,060
2022	6,937	907
2023	5,782	930
2024	4,811	954
2025	4,809	954
Thereafter	22,037	3,487
Total minimum lease payments	51,673	17,292
Less: interest	(12,683)	(1,664)
Present value of lease liabilities	\$ 38,990	\$ 15,628

(1) Future minimum lease payments under finance leases include the exercise price of an option to purchase a facility in Germany exercised by the Company in December 2020 and expected to close in March 2021.

13. Common Shares and Share-Based Compensation

Capital Shares

The authorized capital of the Company consists of an unlimited number of common shares without nominal or par value. Holders of common shares are entitled to one vote per share. Holders of common shares are entitled to receive dividends, if and when declared by the Board of Directors, and to share ratably in the Company's assets legally available for distribution to shareholders in the event of liquidation. Holders of common shares have no redemption or conversion rights.

Common Share Repurchases

The Company's Board of Directors may approve share repurchase plans from time to time. Under these repurchase plans, shares may be repurchased at the Company's discretion based on ongoing assessment of the capital needs of the business, the market price of the Company's common shares, and general market conditions. Shares may also be repurchased through an accelerated share purchase agreement, on the open market or in privately negotiated transactions in accordance with applicable federal securities laws. Repurchases may be made under certain SEC regulations, which would permit common shares to be repurchased when the Company would otherwise be prohibited from doing so under insider trading laws. While the share repurchase plans are generally intended to offset dilution from equity awards granted to the Company's employees and directors, the plans do not obligate the Company to acquire any particular amount of common shares. No time limit is typically set for the completion of the share repurchase plans, and the plans may be suspended or discontinued at any time. The Company expects to fund share repurchases through cash on hand and cash generated from operations.

In October 2013, the Company's Board of Directors approved a share repurchase plan (the "2013 Repurchase Plan") authorizing the repurchase of \$10.0 million worth of common shares. During 2018, the Company repurchased 89 thousand shares in the open market for an aggregate purchase price of \$5.9 million at an average price of \$65.43 per share. As of December 31, 2018, the Company had repurchased an aggregate of 385 thousand shares for an aggregate purchase price of \$10.0 million at an average price of \$25.97 per share. As of December 31, 2018, the Company had completed the 2013 Repurchase Plan.

In October 2018, the Company's Board of Directors approved a share repurchase plan (the "2018 Repurchase Plan") authorizing the repurchase of \$25.0 million worth of common shares. Share repurchases have been made under the 2018 Repurchase Plan pursuant to Rule 10b-18 under the Securities Exchange Act of 1934. During 2020, the Company repurchased 65 thousand shares for an aggregate purchase price of \$5.5 million at an average price of \$84.55 per share. During 2019, the Company repurchased 119 thousand shares for an aggregate purchase price of \$10.0 million at an average price of \$83.71 per share under the 2018 Repurchase Plan. The Company had \$9.5 million available for share repurchases under the 2018 Repurchase Plan as of December 31, 2020.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
AS OF DECEMBER 31, 2020

In February 2020, the Company's Board of Directors approved a new share repurchase plan (the "2020 Repurchase Plan") authorizing the repurchase of an additional \$50.0 million worth of common shares, effective after the completion of the 2018 Repurchase Plan.

As of December 31, 2020, the Company had \$59.5 million available under the 2018 and 2020 share repurchase plans for future share repurchases.

In an effort to preserve cash in light of the economic slowdown caused by the COVID-19 pandemic, the Company has temporarily suspended repurchases under the share repurchase plans since April 2020.

2010 Incentive Award Plan

In November 2010, the Company's shareholders approved the 2010 Incentive Award Plan under which the Company may grant share-based compensation awards to employees, consultants and directors. In May 2014, the Company's shareholders approved the amended and restated 2010 Incentive Award Plan and, in July 2016, the Company approved a further amended and restated 2010 Incentive Award Plan (as amended, the "Amended and Restated 2010 Incentive Plan"). The maximum number of shares which can be issued pursuant to the Amended and Restated 2010 Incentive Plan is 4,398,613, subject to adjustment as set forth in the Amended and Restated 2010 Incentive Plan. The Amended and Restated 2010 Incentive Plan provides for the grant of incentive stock options, non-qualified stock options, restricted stock, restricted stock units, stock appreciation rights, deferred stock, deferred stock units, dividend equivalents, performance awards and stock payments (collectively referred to as "Awards"). The Amended and Restated 2010 Incentive Plan provides for specific limits on the number of shares with respect to Awards that may be granted to any person during any calendar year and the amount of cash that can be paid with respect to Awards to any one person during any calendar year. The Amended and Restated 2010 Incentive Plan will expire and no further Awards may be granted after April 9, 2024. As of December 31, 2020, there were 535,361 shares available for future awards under the Amended and Restated 2010 Incentive Plan.

Shares subject to Awards that have expired, forfeited or settled in cash, or repurchased by the Company at the same price paid by the awardee may be added back to the number of shares available for grant under the Amended and Restated 2010 Incentive Plan and may be granted as new Awards. Notwithstanding the foregoing, the following shares will not be added back to the number of shares available for grant: (a) shares that are used to pay the exercise price for an option, (b) shares tendered or withheld to pay taxes with respect to any Award (other than options and stock appreciation rights) to the extent they exceed the number of shares with a fair market value equal to the tax liability based on minimum withholding rates, (c) shares tendered or withheld to pay taxes with respect to options and stock appreciation rights, (d) shares subject to a stock appreciation right that are not issued in connection with the stock settlement of the stock appreciation right on exercise thereof, and (e) shares purchased on the open market with the cash proceeds from the exercise of options. Shares issued to satisfy Awards under the Amended and Restated 2010 Incentive Plan may be previously authorized but unissued shares, treasury shares or shares repurchased on the open market.

Share-Based Compensation Expense

The table below summarizes share-based compensation expense recorded in operating income (in thousands):

	Year Ended December 31,		
	2020	2019	2018
Selling, general and administrative	\$ 14,550	\$ 8,361	\$ 6,997
Research and development and engineering	3,301	497	438
Cost of revenue	4,684	482	211
Restructuring and acquisition related costs	584	—	68
Total share-based compensation expense	<u>\$ 23,119</u>	<u>\$ 9,340</u>	<u>\$ 7,714</u>

The expense recorded during each of the three years ended December 31, 2020, 2019 and 2018 included \$1.0 million, \$0.9 million and \$0.5 million, respectively, related to restricted stock units and deferred stock units granted to the members of the Company's Board of Directors.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
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On April 15, 2020, the Company issued to all employees, other than the Chief Executive Officer, the Chief Financial Officer, the Chief Human Resources Officer, and the Chief Accounting Officer, a special one-time restricted stock unit grant at a total fair value of \$14.4 million in the aggregate. The restricted stock units vested on February 16, 2021.

As of December 31, 2020, the Company's outstanding equity awards for which compensation expense will be recognized in the future consisted of time-based restricted stock units and performance stock units granted under the Amended and Restated 2010 Incentive Plan. The Company expects to record an aggregate share-based compensation expense of \$18.0 million, net of estimated forfeitures, over a weighted average period of 0.96 years subsequent to December 31, 2020, for all outstanding equity awards as of December 31, 2020.

Restricted Stock Units and Deferred Stock Units

The Company's restricted stock units ("RSUs") have generally been issued to employees with vesting periods ranging from three years to five years and vest based solely on service conditions. Accordingly, the Company recognizes compensation expense on a straight-line basis over the requisite service period. The Company reduces the compensation expense by an estimated forfeiture rate which is based on anticipated forfeitures and actual experience.

Deferred stock units ("DSUs") are granted to the members of the Company's Board of Directors. The compensation expense associated with the DSUs is recognized in full on the respective date of grant, as DSUs are fully vested and non-forfeitable upon grant. There were 162 thousand and 187 thousand DSUs outstanding as of December 31, 2020 and December 31, 2019, respectively, which were included in the calculation of weighted average basic shares outstanding for the respective periods.

The table below summarizes activities during 2020 relating to restricted and deferred stock units issued and outstanding under the Amended and Restated 2010 Incentive Plan:

	Restricted and Deferred Stock Units (In thousands)	Weighted Average Grant Date Fair Value	Weighted Average Remaining Vesting Period (In years)	Aggregate Intrinsic Value (1) (In thousands)
Unvested at December 31, 2019	453	\$ 39.74		
Granted	295	\$ 85.96		
Vested	(111)	\$ 52.27		
Forfeited	(12)	\$ 78.65		
Unvested at December 31, 2020	625	\$ 58.79	0.67 years	\$ 73,922
Expected to vest as of December 31, 2020	605	\$ 57.85	0.67 years	\$ 71,545

(1) The aggregate intrinsic value is calculated based on the fair value of \$118.22 per share of the Company's common stock on December 31, 2020 due to the fact that the restricted stock units carry a \$0 purchase price.

The total fair value of restricted stock units and deferred stock units that vested in 2020, based on the market price of the underlying shares on the day of vesting, was \$10.4 million.

Performance Stock Units

The Company typically grants two types of performance-based stock awards to certain members of the executive management team: non-GAAP EPS performance-based restricted stock units ("EPS-PSUs") and relative total shareholder return performance-based restricted stock units ("TSR-PSUs"). Both types of performance-based restricted stock units generally cliff vest on the first day following the end of a three-year performance period.

The number of common shares to be issued upon settlement following vesting of the EPS-PSUs is determined based on the Company's cumulative non-GAAP EPS over the three-year performance period against the target established by the Company's Board of Directors at the time of grant and will be in the range of zero to 200% of the target number of shares. The Company recognizes compensation expense ratably over the performance period based on the number of shares that are deemed probable of vesting at the end of the three-year performance cycle. This probability assessment is performed quarterly and the cumulative effect of a change in the estimated compensation expense, if any, is recognized in the consolidated statement of operations in the period in which such determination is made.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
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The number of common shares to be issued upon settlement following vesting of the TSR-PSUs is determined based on the relative market performance of the Company's common stock compared to the Russell 2000 Index over the three-year performance period using a payout formula established by the Company's Board of Directors at the time of grant and will be in the range of zero to 200% of the target number of shares. The Company recognizes the related compensation expense based on the fair value of the TSR-PSUs, determined using the Monte-Carlo valuation model as of the grant date, on a straight-line basis from the grant date to the end of the three-year performance period. Compensation expense will not be affected by the number of TSR-PSUs that will actually vest at the end of the three-year performance period.

The table below summarizes activities during 2020 relating to performance-based stock awards issued and outstanding under the Company's Amended and Restated 2010 Incentive Plan:

	Performance Stock Units (1) (In thousands)	Weighted Average Grant Date Fair Value	Weighted Average Remaining Vesting Period (In years)	Aggregate Intrinsic Value (2) (In thousands)
Unvested at December 31, 2019	152	\$ 57.95		
Granted	50	\$ 111.47		
Performance adjustment (3)	60	\$ 28.80		
Vested	(120)	\$ 28.80		
Forfeited	—	\$ —		
Unvested at December 31, 2020	142	\$ 88.99	1.07 years	\$ 16,437
Expected to vest as of December 31, 2020	150	\$ 91.13	1.07 years	\$ 17,724

- (1) The unvested PSUs are shown in this table at target. The number of shares vested reflects the number of shares earned and issued during the year. As of December 31, 2020, the maximum number of PSUs available to be earned was approximately 283 thousand.
- (2) The aggregate intrinsic value is calculated based on the fair value of \$118.22 per share of the Company's common stock on December 31, 2020 due to the fact that the performance stock units carry a \$0 purchase price.
- (3) The amount shown represents performance adjustments for performance-based awards granted on February 28, 2017. These units vested at 200% during 2020 based on the achievement of cumulative Non-GAAP EPS and applicable relative TSR performance conditions during the performance period of fiscal years 2017 through 2019.

The total fair value of PSUs that vested in 2020, based on the market price of the underlying shares on the date of vesting, was \$10.8 million.

The fair value of the TSR-PSUs at the date of grant was estimated using the Monte-Carlo valuation model with the following assumptions:

	Year Ended December 31, 2020	
Grant-date stock price	\$	96.28
Expected volatility		34.25%
Risk-free interest rate		1.35%
Expected annual dividend yield		—
Weighted average fair value	\$	126.65

Stock Options

On March 30, 2016, the Company granted 193 thousand stock options to certain members of the executive management team to purchase common shares of the Company at a price equal to the closing market price of the Company's common shares on the date of grant. The stock options vested ratably on the anniversary date of the grant date over a three-year period and expire on the tenth anniversary of the grant date. The fair value of these stock options was estimated using the Black-Scholes valuation model. Key input assumptions used to estimate the fair value of stock options included the expected option term, the expected volatility of the Company's common stock over the expected term of the options, the risk-free interest rate, and the expected dividend yield. The Company recognized the compensation expense of stock options on a straight-line basis in the consolidated statement of operations over the vesting period. No stock options were granted during 2020.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
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The following table shows stock options that were outstanding, exercisable and expected to vest as of December 31, 2020 and the related weighted average exercise price, weighted average remaining contractual term and aggregate intrinsic value:

	Number of Shares (In thousands)	Weighted Average Exercise Price	Weighted Average Remaining Contractual Term (In years)	Aggregate Intrinsic Value (1) (In thousands)
Stock options outstanding	60	\$ 14.13	5.25	\$ 6,259
Stock options exercisable	60	\$ 14.13	5.25	\$ 6,259

(1) The aggregate intrinsic value is calculated as the difference between the closing market price of \$118.22 per share of the Company's common stock on December 31, 2020 and the exercise price of the stock options.

The total intrinsic value of stock options exercised in 2020, based on the difference between the market price on the date of exercise and the date of grant, was \$1.0 million. The total amount of cash received from the exercise of these stock options was \$0.2 million. The Company did not record any income tax deductions from the stock options exercised in 2020 as these were non-qualified stock options.

14. Employee Benefit Plans

Defined Contribution Plans

The Company has defined contribution employee retirement savings plans in the U.S., the U.K. and Japan. The Company matches the contributions of participating employees on the basis of percentages specified in each plan. The Company's matching contributions to the plans were \$4.2 million, \$4.4 million and \$3.9 million for the years ended December 31, 2020, 2019 and 2018, respectively.

Defined Benefit Plan

The Company maintains a frozen defined benefit pension plan in the U.K. (the "U.K. Plan"). The U.K. Plan was closed to new membership in 1997 and stopped accruing additional pension benefits for existing members in 2003. Benefits under the U.K. Plan were based on the participants' years of service and compensation as of the date the plan was frozen in 2003, adjusted for inflation. The Company continues to fund the plan in accordance with the pension regulations in the U.K.

The net periodic pension cost is included in other income (expense) in the consolidated statements of operations and consisted of the following components (in thousands):

	Year Ended December 31,		
	2020	2019	2018
Components of the net periodic pension cost:			
Interest cost	\$ 736	\$ 971	\$ 939
Expected return on plan assets	(1,340)	(1,671)	(1,717)
Amortization of actuarial losses	686	957	826
Amortization of prior service cost	29	29	—
Net periodic pension cost	\$ 111	\$ 286	\$ 48

The actuarial assumptions used to compute the net periodic pension cost for the years ended December 31, 2020, 2019 and 2018, respectively, were as follows:

	Year Ended December 31,		
	2020	2019	2018
Weighted-average discount rate	1.9%	2.7%	2.4%
Weighted-average long-term rate of return on plan assets	3.6%	5.1%	4.8%

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
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The actuarial assumptions used to compute the benefit obligations as of December 31, 2020 and 2019, respectively, were as follows:

	December 31,	
	2020	2019
Weighted-average discount rate	1.2%	1.9%
Rate of inflation	2.6%	2.5%

The discount rates used are derived from (AA) corporate bonds that have maturities approximating the terms of the pension obligations under the U.K. Plan. In estimating the expected return on plan assets, the Company considered the historical performance of the major asset classes held by the U.K. Plan and current forecasts of future rates of return for these asset classes.

The following table provides a reconciliation of benefit obligations and plan assets of the U.K. Plan (in thousands):

	December 31,	
	2020	2019
Change in benefit obligation:		
Projected benefit obligation at beginning of year	\$ 40,456	\$ 36,882
Interest cost	736	971
Actuarial (gains) losses (1)	5,410	3,005
Benefits paid	(1,111)	(1,696)
Foreign currency exchange rate changes	1,709	1,294
Projected benefit obligation at end of year	\$ 47,200	\$ 40,456
Accumulated benefit obligation at end of year	\$ 47,200	\$ 40,456
Change in plan assets:		
Fair value of plan assets at beginning of year	\$ 38,983	\$ 33,124
Actual return on plan assets	5,170	5,410
Employer contributions	988	894
Benefits paid	(1,111)	(1,696)
Foreign currency exchange rate changes	1,659	1,251
Fair value of plan assets at end of year	\$ 45,689	\$ 38,983
Funded status at end of year	\$ (1,511)	\$ (1,473)
Amounts included in accumulated other comprehensive loss not yet recognized in net periodic pension cost:		
Net actuarial losses at beginning of year	\$ (9,706)	\$ (11,120)
Net actuarial gains (losses) during the year	(1,580)	734
Amounts reclassified from accumulated other comprehensive income to income before income taxes	715	986
Foreign currency exchange rate changes	(387)	(306)
Net actuarial losses	\$ (10,958)	\$ (9,706)

(1) Fiscal year 2020 and 2019 actuarial losses in the U.K. Plan primarily resulted from changes in the discount rate assumptions.

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The funded status of the U.K. Plan is included in other long term liabilities in the accompanying consolidated balance sheets.

The following table reflects the total expected benefit payments to plan participants for each of the next five years and the following five years in aggregate and have been estimated based on the same assumptions used to measure the Company's benefit obligations as of December 31, 2020 (in thousands):

	Amount	
2021	\$	1,252
2022		1,109
2023		1,211
2024		1,588
2025		1,439
2026-2030		10,015
Total	\$	16,614

In the U.K., funding valuations are conducted every three years in order to determine the future level of contributions. Based on the results of the most recent valuation, the Company's annual contributions will be approximately \$1.0 million in 2021 and will increase by 2.9% per year thereafter.

Fair Value of Plan Assets

The trustee of the U.K. Plan has the fiduciary responsibilities to manage the plan assets in consultation with the Company. The overall objective is to invest plan assets in a portfolio of diversified assets, primarily through the use of institutional collective funds, to achieve balanced growth through a combination of investments in equities for long-term growth and investments in debt instruments that match a portion of the expected future benefit payments and to maintain adequate liquidity to make pension payments to pensioners.

The following table summarizes the fair values of Plan assets by asset category as of December 31, 2020 (in thousands):

Asset Category	Fair Value	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Other Unobservable Inputs (Level 3)	Not Subject to Leveling
Mutual Funds:					
Balanced (1)	\$ 31,572	\$ —	\$ —	\$ —	\$ 31,572
Fixed income (2)	13,251	—	—	—	13,251
Cash	866	866	—	—	—
Total	\$ 45,689	\$ 866	\$ —	\$ —	\$ 44,823

(1) This class comprises a diversified portfolio of global investments which seeks a balanced return between capital growth and fixed income and is allocated on a weighted average basis as follows: equities (35%), bonds (37%), other assets (19%) and cash (9%).

(2) This class comprises a diversified portfolio of global investments which seeks fixed income growth and is allocated on a weighted average basis as follows: bonds (83%) and other assets (16%) and cash (1%).

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The following table summarizes the fair values of Plan assets by asset category as of December 31, 2019 (in thousands):

Asset Category	Fair Value	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Other Unobservable Inputs (Level 3)	Not Subject to Leveling
Mutual Funds:					
Balanced (1)	\$ 28,831	\$ —	\$ —	\$ —	\$ 28,831
Fixed income (2)	10,042	—	—	—	10,042
Cash	110	110	—	—	—
Total	\$ 38,983	\$ 110	\$ —	\$ —	\$ 38,873

- (1) This class comprises a diversified portfolio of global investments which seeks a balanced return between capital growth and fixed income and is allocated on a weighted average basis as follows: equities (32%), bonds (42%), other assets (19%) and cash (7%).
- (2) This class comprises a diversified portfolio of global investments which seeks fixed income growth and is allocated on a weighted average basis as follows: bonds (92%), other assets (5%) and cash (3%).

15. Income Taxes

Components of the Company's income (loss) before income taxes are as follows (in thousands):

	Year Ended December 31,		
	2020	2019	2018
Income (loss) before income taxes:			
Canada	\$ (2,278)	\$ 78	\$ (796)
U.S.	16,875	25,577	39,356
Other	33,806	20,111	22,742
Total	\$ 48,403	\$ 45,766	\$ 61,302

Components of the Company's income tax provision (benefit) are as follows (in thousands):

	Year Ended December 31,		
	2020	2019	2018
Current			
Canada	\$ 82	\$ 100	\$ 75
U.S.	1,324	1,109	8,095
Other	6,589	8,116	8,113
	7,995	9,325	16,283
Deferred			
Canada	(493)	—	—
U.S.	(1,256)	703	(2,272)
Other	(2,364)	(5,035)	(3,804)
	(4,113)	(4,332)	(6,076)
Total	\$ 3,882	\$ 4,993	\$ 10,207

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The Company is incorporated in Canada and therefore uses the Canadian statutory rate for income tax disclosure. The reconciliation of the statutory Canadian tax rate to the effective tax rate related to income before income taxes is as follows (in thousands, except percentage data):

	Year Ended December 31,			
	2020	2019	2018	
Statutory Canadian tax rate	29.00%	29.00%	29.00%	29.00%
Expected income tax provision at Canadian statutory tax rate	\$ 14,037	\$ 13,272	\$ 17,778	
International tax rate differences	(3,483)	(3,346)	(4,474)	
U.S. state income taxes, net	(108)	386	831	
Withholding and other taxes	485	364	550	
Permanent differences and other	259	443	1,015	
Disallowed compensation	685	-	-	
Foreign-derived intangible income	(1,063)	(787)	(1,628)	
Tax credits	(2,016)	(1,457)	(1,250)	
Statutory tax rate changes	429	35	(285)	
Uncertain tax positions	(176)	310	190	
Change in valuation allowance	(727)	(482)	(262)	
Acquisition contingent consideration adjustments	(1,513)	287	833	
Transaction costs	(23)	247	172	
Provision to return differences	750	(516)	(385)	
Windfall benefit from share-based compensation	(2,322)	(1,717)	(931)	
UK patent box	(1,332)	(2,046)	(1,947)	
Reported income tax provision	\$ 3,882	\$ 4,993	\$ 10,207	
Effective tax rate	8.0%	10.9%	16.7%	

Deferred income taxes result principally from temporary differences in the recognition of certain revenue and expense items and operating loss and tax credit carryforwards for financial and tax reporting purposes. Significant components of the Company's deferred tax assets and liabilities as of December 31, 2020 and 2019 are as follows (in thousands):

	December 31,	
	2020	2019
Deferred tax assets:		
Losses	\$ 8,524	\$ 9,484
Operating lease liabilities	10,216	8,386
Compensation related deductions	5,955	3,932
Inventories	5,090	4,543
Tax credits	2,958	2,785
Restructuring related liabilities	185	324
Warranty	720	772
Other	957	146
Total deferred tax assets	34,605	30,372
Valuation allowance on deferred tax assets	(11,561)	(12,302)
Net deferred tax assets	\$ 23,044	\$ 18,070
Deferred tax liabilities:		
Depreciation	\$ (1,583)	\$ (1,338)
Amortization	(24,772)	(26,310)
Unrealized currency gains/losses	(372)	(194)
Operating lease right-of-use assets	(9,960)	(8,014)
Total deferred tax liabilities	\$ (36,687)	\$ (35,856)
Net deferred income tax assets (liabilities)	\$ (13,643)	\$ (17,786)

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In determining its income tax provisions, the Company calculated deferred tax assets and liabilities for each separate jurisdiction. The Company then considered a number of factors, including positive and negative evidence related to the realization of its deferred tax assets, to determine whether a valuation allowance should be recognized with respect to its deferred tax assets.

In 2020, the Company reversed valuation allowance of \$0.7 million recorded on net operating losses and other timing items in certain tax jurisdictions due to current and forecasted taxable income. In 2019, the Company reversed valuation allowance of \$0.5 million recorded on net operating losses and other timing in certain tax jurisdictions due to taxable income generated during the year. In 2018, the Company recorded an additional \$0.4 million valuation allowance associated with an increase in deferred tax assets in Canada.

Valuation allowance continues to be provided on the remaining balances of certain U.S. state net operating losses and certain foreign tax attributes that the Company has determined that it is not more likely than not that they will be realized. In conjunction with the Company's ongoing review of its actual results and anticipated future earnings, the Company continuously reassesses the possibility of releasing the valuation allowance currently in place on its deferred tax assets.

As of December 31, 2020, the Company had net operating loss carryforwards of \$3.1 million (tax effected) available to reduce future taxable income. Of this amount, approximately \$0.9 million relates to the U.S. and expires through 2037; and \$2.1 million relates to Canada and expires starting in 2033. In addition, the Company had capital loss carryforwards of \$5.7 million, which had a full valuation allowance. Of this amount, \$5.1 million and \$0.6 million related to Canada and the U.K, respectively.

As of December 31, 2019, the Company had net operating loss carryforwards of \$3.8 million (tax effected) available to reduce future taxable income. Of this amount, approximately \$0.3 million relates to the U.S. and expires through 2037; and \$3.5 million relates to Canada and expires starting in 2033. In addition, the Company had capital loss carryforwards of \$5.7 million, which had a full valuation allowance. Of this amount, \$5.2 million and \$0.5 million related to Canada and the U.K, respectively.

As of December 31, 2020, the Company had tax credit carryforwards of approximately \$3.3 million available to reduce income taxes in future years. Approximately \$1.4 million relates to the U.S. state tax credits, of which \$1.3 million will expire through 2035 and \$0.1 million can be carried forward indefinitely. The remaining \$1.9 million tax credit carryforwards were related to Canada, of which \$1.2 million expires through 2022 and \$0.7 million can be carried forward indefinitely.

As of December 31, 2019, the Company had tax credit carryforwards of approximately \$2.8 million available to reduce income taxes in future years. Approximately \$0.9 million relates to the U.S. state tax credits, of which \$0.8 million will expire through 2034 and \$0.1 million can be carried forward indefinitely. The remaining \$1.9 million tax credit carryforwards were related to Canada, of which \$1.2 million expires through 2022 and \$0.7 million can be carried forward indefinitely.

Income and foreign withholding taxes have not been recognized on the excess of the amount for financial reporting purposes over the tax basis of investments in foreign subsidiaries that are essentially permanent in nature. This amount becomes taxable upon a repatriation of assets from a subsidiary or a sale or liquidation of a subsidiary. The amount of undistributed earnings of foreign subsidiaries totaled \$220.4 million as of December 31, 2020. The estimated unrecognized income tax and foreign withholding tax liability on this temporary difference is approximately \$3.9 million.

As of December 31, 2020, the Company's total amount of gross unrecognized tax benefits was \$5.3 million, of which \$5.0 million would favorably affect the effective tax rate if benefited. Over the next twelve months, the Company may need to record up to \$0.5 million of previously unrecognized tax benefits due to statute of limitations closures. The Company believes there are no jurisdictions in which the outcome of unresolved issues or claims is likely to be material to its results of operations, financial position or cash flows. Furthermore, the Company believes that it has adequately provided for all significant income tax uncertainties.

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The reconciliation of the total amounts of unrecognized tax benefits is as follows (in thousands):

Balance at December 31, 2017	\$ 4,089
Additions based on tax positions related to the current year	394
Additions for tax positions of prior years	655
Reductions to tax positions of prior years	(69)
Reductions to tax positions resulting from a lapse of the applicable statute of limitations	(239)
Settlements with tax authorities	(105)
Balance at December 31, 2018	4,725
Additions based on tax positions related to the current year	727
Additions for tax positions of prior years	5
Reductions to tax positions of prior years	(31)
Reductions to tax positions resulting from a lapse of the applicable statute of limitations	(497)
Settlements with tax authorities	-
Balance at December 31, 2019	4,929
Additions based on tax positions related to the current year	476
Additions for tax positions of prior years	356
Reductions to tax positions of prior years	(5)
Reductions to tax positions resulting from a lapse of the applicable statute of limitations	(498)
Settlements with tax authorities	—
Balance at December 31, 2020	\$ 5,258

The Company recognizes interest and penalties related to uncertain tax positions in income tax provision. As of December 31, 2020 and 2019, the Company had approximately \$0.7 million and \$0.5 million, respectively, of accrued interest and penalties related to uncertain tax positions. During the years ended December 31, 2020, 2019 and 2018, the Company recognized \$0.2 million, \$0.1 million and \$0.1 million, respectively, of expense for an increase in interest and penalties related to uncertain tax positions.

The Company files income tax returns in Canada, the U.S., and various foreign jurisdictions. Generally, the Company is no longer subject to U.S. or foreign income tax examinations, including transfer pricing tax audits, by tax authorities for the years before 2010.

The Company's income tax returns may be reviewed by tax authorities in the following countries for the following periods under the appropriate statute of limitations:

United States	2017 - Present
Canada	2017 - Present
United Kingdom	2019 - Present
Germany	2016 - Present
The Netherlands	2014 - Present
China	2011 - Present
Japan	2015 - Present

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
AS OF DECEMBER 31, 2020

16. Restructuring and Acquisition Related Costs

The following table summarizes restructuring and acquisition related costs recorded in the accompanying consolidated statements of operations (in thousands):

	Year Ended December 31,		
	2020	2019	2018
2020 restructuring	\$ 2,736	\$ —	\$ —
2019 restructuring	988	7,463	378
2018 restructuring	753	1,177	\$ 1,647
Total restructuring related charges	\$ 4,477	\$ 8,640	\$ 2,025
Acquisition and related charges	(667)	7,934	6,016
Total restructuring and acquisition related costs	\$ 3,810	\$ 16,574	\$ 8,041

2020 Restructuring

As a result of the Company's ongoing evaluations and efforts to reduce its operating costs, while improving efficiency and effectiveness, the Company initiated the 2020 restructuring program in the third quarter of 2020. This program is focused on reducing operating complexity in the Company, including reducing infrastructure costs and streamlining the Company's operating model to better serve its customers. In addition, the program will be focused on cost reduction actions that improve gross margins for the overall company. In 2020, the Company recorded \$2.7 million in severance and other costs in connection with the 2020 restructuring program. The Company anticipates completing the 2020 restructuring program in the fourth quarter of 2021 and expects to incur additional restructuring charges of \$4.0 million to \$5.0 million related to the 2020 restructuring program in the next twelve months.

The following table summarizes restructuring costs associated with the 2020 restructuring program by reportable segment (in thousands):

	Year Ended		Cumulative Costs as of	
	December 31, 2020		December 31, 2020	
Photonics	\$	740	\$	740
Vision		1,330	\$	1,330
Precision Motion		524	\$	524
Unallocated Corporate and Shared Services		142	\$	142
Total	\$	2,736	\$	2,736

2019 Restructuring

During the fourth quarter of 2018, the Company implemented a restructuring plan intended to realign operations, reduce costs, achieve operational efficiencies and focus resources on growth initiatives. In 2020, the Company recorded \$0.1 million in severance and related costs, \$0.5 million in facility related cost and \$0.4 million of other costs in connection with the 2019 restructuring plan. The Company anticipates completing the 2019 restructuring program in the first quarter of 2021 and expects to incur additional restructuring charges of \$0.1 million to \$0.2 million related to the 2019 restructuring program in the next twelve months.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
AS OF DECEMBER 31, 2020

The following table summarizes restructuring costs associated with the 2019 restructuring program by reportable segment (in thousands):

	Year Ended			Cumulative Costs as of
	December 31, 2020	December 31, 2019	December 31, 2018	December 31, 2020
Photonics	\$ 508	\$ 4,983	\$ —	\$ 5,491
Vision	322	1,422	324	2,068
Precision Motion	139	590	—	729
Unallocated Corporate and Shared Services	19	468	54	541
Total	\$ 988	\$ 7,463	\$ 378	\$ 8,829

2018 Restructuring

During the second quarter of 2018, the Company initiated a program to integrate manufacturing operations as a result of acquisition activities. In 2020, the Company recorded \$0.8 million in severance and related costs in connection with the 2018 restructuring plan. The plan was completed in 2020.

The following table summarizes restructuring costs associated with the 2018 restructuring program by reportable segment (in thousands):

	Year Ended			Cumulative Costs as of
	December 31, 2020	December 31, 2019	December 31, 2018	December 31, 2020
Photonics	\$ —	\$ —	\$ —	\$ —
Vision	753	1,177	1,579	3,509
Precision Motion	—	—	—	—
Unallocated Corporate and Shared Services	—	—	68	68
Total	\$ 753	\$ 1,177	\$ 1,647	\$ 3,577

Rollforward of Accrued Expenses Related to Restructuring

The following table summarizes the accrual activities, by component, related to the Company's restructuring charges recorded in the accompanying consolidated balance sheets (in thousands):

	Total	Severance	Facility	Other ⁽¹⁾
Balance at December 31, 2018	\$ 1,276	\$ 876	\$ 388	\$ 12
Restructuring charges	8,640	4,065	3,798	777
Cash payments	(3,507)	(2,803)	—	(704)
Reclassification of reserves ⁽²⁾	(388)	—	(388)	—
Non-cash write-offs and other adjustments ⁽³⁾	(3,948)	(150)	(3,798)	—
Balance at December 31, 2019	2,073	1,988	—	85
Restructuring charges	4,477	3,506	503	468
Cash payments	(4,024)	(3,229)	(115)	(680)
Non-cash write-offs and other adjustments	(726)	(584)	(272)	130
Balance at December 31, 2020	\$ 1,800	\$ 1,681	\$ 116	\$ 3

(1) Other restructuring charges mainly related to consulting fees and relocation costs.

(2) Accruals related to facilities exited prior to January 1, 2019 were reclassified to operating lease liabilities upon adoption of ASU 2016-02.

(3)

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
AS OF DECEMBER 31, 2020

Non-cash write-offs included impairment of operating lease right-of-use assets amounting to \$2.6 million associated with the cessations of use of certain leased facilities.

Acquisition and Related Charges

Acquisition related costs incurred in connection with business combinations, primarily including finders' fees, legal, valuation and other professional or consulting fees, totaled \$0.6 million, \$5.3 million, and \$1.4 million during 2020, 2019, and 2018, respectively. During 2020, the Company incurred \$1.7 million in legal costs related to a dispute involving a company that was acquired in 2019. Acquisition related costs recognized under earn-out agreements in connection with acquisitions totaled (\$3.0) million, \$2.6 million, and \$4.6 million during 2020, 2019, and 2018, respectively. The acquisition related costs for 2020 were (\$3.3) million, \$2.5 million, (\$0.2) million and \$0.4 million for Photonics, Vision, Precision Motion, and Unallocated Corporate and Shared Services reportable segments, respectively.

17. Commitments and Contingencies

Purchase Commitments

As of December 31, 2020, the Company had purchase commitments primarily for inventory purchases of \$54.6 million. These purchase commitments are expected to be incurred as follows: \$54.4 million in 2021 and \$0.2 million in 2022.

Legal Proceedings

In April 2020, the Company received notification of an arbitration demand filed with the American Arbitration Association against a business acquired by the Company in June 2019. The arbitration demand was filed by a contract counterparty to a joint product development agreement entered into by the business before the Company acquired it. The arbitration demand alleges breach of contract and other claims arising out of allegations that the business failed to engage in required marketing activities for the product developed under the joint product development agreement. The claimant is seeking compensatory and punitive damages, lost profits and other relief. The Company believes that the claims are without merit and no amount has been accrued for in the consolidated financial statements.

The Company is subject to various other legal proceedings and claims that arise in the ordinary course of business. The Company reviews the status of each significant matter and assesses the potential financial exposure on a quarterly basis. If the potential loss from any claim or legal proceeding is considered probable and the amount can be reasonably estimated, the Company accrues a liability for the estimated loss. Significant judgment is required in both the determination of probability and the determination as to whether an exposure is reasonably estimable. Because of uncertainties related to these matters, accruals are based only on the best information available as of the date of the consolidated balance sheet. As additional information becomes available, the Company reassesses the potential liability related to any pending claims and litigation and may revise its estimates. The Company does not believe that the outcome of these claims will have a material adverse effect upon its consolidated financial statements but there can be no assurance that any such claims, or any similar claims, would not have a material adverse effect upon its consolidated financial statements.

Guarantees and Indemnifications

In the normal course of its operations, the Company executes agreements that provide for indemnification and guarantees to counterparties in transactions such as business dispositions, sale of assets, sale of products and operating leases. Additionally, the by-laws of the Company require it to indemnify certain current or former directors, officers, and employees of the Company against expenses incurred by them in connection with each proceeding in which he or she is involved as a result of serving or having served in certain capacities. Indemnification is not available with respect to a proceeding as to which it has been adjudicated that the person did not act in good faith in the reasonable belief that the action was in the best interests of the Company. Certain of the Company's officers and directors are also a party to indemnification agreements with the Company. These indemnification agreements provide, among other things, that the director and officer shall be indemnified to the fullest extent permitted by applicable law against all expenses, judgments, fines and amounts paid in settlement actually and reasonably incurred by such officer or director in connection with any proceeding by reason of his or her relationship with the Company. In addition, the indemnification agreements provide for the advancement of expenses incurred by such director or officer in connection with any proceeding covered by the indemnification agreement, subject to the conditions set forth therein and to the extent such advancement is not prohibited by law. The indemnification agreements also set out the procedures for determining entitlement to indemnification, the requirements relating to notice and defense of claims for which indemnification is sought, the procedures for enforcement of indemnification rights, the limitations on and exclusions from indemnification, and the minimum levels of directors' and officers' liability insurance to be maintained by the Company.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
AS OF DECEMBER 31, 2020

On July 1, 2013, the Company provided a Guarantee (the “Guarantee”) in favor of the trustees of the U.K. Plan with respect to all present and future obligations and liabilities (whether actual or contingent and whether owed jointly or severally and in any capacity whatsoever) of Novanta Technologies UK Limited, a wholly owned subsidiary of Novanta Inc.

Credit Risks and Other Uncertainties

The Company maintains financial instruments such as cash and cash equivalents and trade receivables. From time to time, certain of these instruments may subject the Company to concentrations of credit risk whereby one institution may hold a significant portion of the cash and cash equivalents, or one customer may represent a large portion of the accounts receivable balances.

There was no significant concentration of credit risk related to the Company's position in trade accounts receivable as no individual customer represented 10% or more of the Company's outstanding accounts receivable at December 31, 2020 and 2019. Credit risk with respect to trade accounts receivables is generally minimized because of the diversification of the Company's operations, as well as its large customer base and its geographic dispersion.

Certain of the components and materials included in the Company's products are currently obtained from single source suppliers. There can be no assurance that a disruption of the supply of such components and materials would not create substantial manufacturing delays and additional cost to the Company.

The Company's operations involve a number of other risks and uncertainties including, but not limited to, the effects of general economic conditions, rapidly changing technologies, and international operations.

18. Segment Information

Reportable Segments

The Company's Chief Operating Decision Maker (“CODM”) is our Chief Executive Officer. Our CODM utilizes financial information to make decisions about allocating resources and assessing performance for the entire Company. The Company evaluates the performance of, and allocates resources to, its segments based on revenue, gross profit and operating profit. The Company's reportable segments have been identified based on commonality and adjacency of technologies, applications and customers amongst the Company's individual product lines. The Company determined that disclosing revenue by specific product was impracticable due to the highly customized and extensive portfolio of technologies offered to customers.

Based upon the information provided to the CODM, the Company has determined it operates in three reportable segments: Photonics, Vision, and Precision Motion. The reportable segments and their principal activities consist of the following:

Photonics

The Photonics segment designs, manufactures and markets photonics-based solutions, including laser scanning, laser beam delivery, CO2 laser, solid state laser, ultrafast laser, and optical light engine products to customers worldwide. The segment serves highly demanding photonics-based applications for advanced industrial processes, metrology, medical and life science imaging, DNA sequencing, and medical laser procedures. The vast majority of the segment's product offerings are sold to OEM customers. The segment sells these products both directly, utilizing a highly technical sales force, and indirectly, through resellers and distributors.

Vision

The Vision segment designs, manufactures and markets a range of medical grade technologies, including medical insufflators, pumps and related disposables; visualization solutions; wireless, recorder and video integration technologies for operating room integrations; optical data collection and machine vision technologies; radio frequency identification technologies; thermal chart recorders; spectrometry technologies; and embedded touch screen solutions. The vast majority of the segment's product offerings are sold to OEM customers. The segment sells these products both directly, utilizing a highly technical sales force, and indirectly, through resellers and distributors.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
AS OF DECEMBER 31, 2020

Precision Motion

The Precision Motion segment designs, manufactures and markets optical and inductive encoders, precision motor and motion control sub-assemblies, servo drives, air bearings, and air bearing spindles to customers worldwide. The vast majority of the segment's product offerings are sold to OEM customers. The segment sells these products both directly, utilizing a highly technical sales force, and indirectly, through resellers and distributors.

Reportable Segment Financial Information

Revenue, gross profit, operating income (loss), depreciation and amortization expenses, accounts receivable and inventories by reportable segments were as follows (in thousands):

	Year Ended December 31,		
	2020	2019	2018
Revenue			
Photonics	\$ 199,613	\$ 230,457	\$ 249,339
Vision	261,650	271,407	232,902
Precision Motion	129,360	124,235	132,096
Total	\$ 590,623	\$ 626,099	\$ 614,337
	Year Ended December 31,		
	2020	2019	2018
Gross Profit			
Photonics	\$ 89,060	\$ 105,845	\$ 117,109
Vision	100,267	105,228	87,198
Precision Motion	58,279	53,326	59,477
Unallocated Corporate and Shared Services	(3,089)	(2,314)	(2,256)
Total	\$ 244,517	\$ 262,085	\$ 261,528
	Year Ended December 31,		
	2020	2019	2018
Operating Income (Loss)			
Photonics	\$ 34,001	\$ 41,990	\$ 59,285
Vision	16,354	21,007	8,991
Precision Motion	31,663	22,339	31,674
Unallocated Corporate and Shared Services	(26,130)	(30,054)	(28,937)
Total	\$ 55,888	\$ 55,282	\$ 71,013
	Year Ended December 31,		
	2020	2019	2018
Depreciation and Amortization Expenses			
Photonics	\$ 11,261	\$ 12,139	\$ 12,042
Vision	21,374	21,161	20,657
Precision Motion	5,443	4,712	3,627
Unallocated Corporate and Shared Services	215	268	726
Total	\$ 38,293	\$ 38,280	\$ 37,052

NOVANTA INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
AS OF DECEMBER 31, 2020

	December 31,	
	2020	2019
Accounts Receivable		
Photonics	\$ 27,328	\$ 31,046
Vision	33,194	43,941
Precision Motion	14,532	16,091
Total accounts receivable	\$ 75,054	\$ 91,078
Inventories		
Photonics	\$ 35,878	\$ 45,227
Vision	41,137	50,074
Precision Motion	15,722	21,317
Total inventories	\$ 92,737	\$ 116,618
Total segment assets	\$ 167,791	\$ 207,696

	December 31,	
	2020	2019
Total Assets		
Total segment assets	\$ 167,791	\$ 207,696
Cash and cash equivalents	125,054	78,944
Prepaid income taxes and income taxes receivable	3,203	5,905
Prepaid expenses and other current assets	8,125	11,967
Property, plant and equipment, net	78,676	77,556
Operating lease assets	34,444	35,180
Deferred tax assets	10,491	8,890
Other assets	2,894	2,713
Intangible assets, net	148,521	166,175
Goodwill	285,980	274,710
Total	\$ 865,179	\$ 869,736

Geographic Information

The Company aggregates geographic revenue based on the customer location where products are shipped. Revenue from these customers is summarized as follows (in thousands, except percentage data):

	Year Ended December 31,					
	2020		2019		2018	
	Revenue	% of Total	Revenue	% of Total	Revenue	% of Total
United States	\$ 225,760	38.2%	\$ 254,279	40.6%	\$ 242,243	39.4%
Germany	83,765	14.2	82,032	13.1	88,027	14.3
Rest of Europe	127,040	21.5	129,643	20.7	105,608	17.2
China	70,557	11.9	59,512	9.5	66,414	10.8
Rest of Asia-Pacific	74,334	12.6	89,588	14.3	104,300	17.0
Other	9,167	1.6	11,045	1.8	7,745	1.3
Total	\$ 590,623	100.0%	\$ 626,099	100.0%	\$ 614,337	100.0%

NOVANTA INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
AS OF DECEMBER 31, 2020

Long-lived assets consist of property, plant and equipment, net, and are aggregated based on the location of the assets. A summary of these long-lived assets is as follows (in thousands):

	December 31,			
	2020		2019	
United States	\$	25,436	\$	28,750
Germany		36,314		32,376
Rest of Europe		14,759		14,303
China		1,809		2,029
Rest of Asia-Pacific		358		98
Total	\$	<u>78,676</u>	\$	<u>77,556</u>

Revenue by End Market

The Company primarily operates in two end markets: the medical market and the advanced industrial market. Revenue by end market was approximately as follows:

	Year Ended December 31,			
	2020		2019	
Medical	56%		55%	50%
Advanced Industrial	44%		45%	50%
Total	100%		100%	100%

The majority of the revenue from the Photonics and Precision Motion segments is generated from sales to customers in the advanced industrial market. The majority of the revenue from the Vision segment is generated from sales to customers in the medical market.

Significant Customers

During the year ended December 31, 2020, an OEM customer primarily from the Vision segment accounted for approximately 11% of our consolidated revenue. No customer accounted for greater than 10% of the Company's revenue during the years ended December 31, 2019 or 2018.

Supplementary Information
(Unaudited)

The Company's interim financial statements are prepared on a quarterly basis ending on the Friday closest to the end of the calendar quarter, with the exception of the fourth quarter which always ends on December 31.

The following tables reflect the Company's unaudited condensed consolidated statements of operations for each of the quarterly periods in 2020 and 2019 (in thousands except per share data):

	Three Months Ended			
	December 31, 2020	October 2, 2020	July 3, 2020	April 3, 2020
Revenue	\$ 147,498	\$ 142,929	\$ 144,728	\$ 155,468
Cost of revenue	85,233	83,824	86,026	91,023
Gross profit	62,265	59,105	58,702	64,445
Operating expenses:				
Research and development and engineering	15,991	15,231	14,440	15,334
Selling, general and administrative	27,402	26,788	24,908	30,755
Amortization of purchased intangible assets	3,582	3,533	3,410	3,445
Restructuring and acquisition related costs	(1,781)	1,687	2,243	1,661
Total operating expenses	45,194	47,239	45,001	51,195
Operating income	17,071	11,866	13,701	13,250
Interest income (expense), foreign exchange transaction gains (losses) and other income (expense), net	(2,291)	(1,848)	(2,005)	(1,341)
Income before income taxes	14,780	10,018	11,696	11,909
Income tax provision	2,124	1,760	36	(38)
Net income	\$ 12,656	\$ 8,258	\$ 11,660	\$ 11,947
Earnings per common share:				
Basic	\$ 0.36	\$ 0.23	\$ 0.33	\$ 0.34
Diluted	\$ 0.35	\$ 0.23	\$ 0.33	\$ 0.34

	Three Months Ended			
	December 31, 2019	September 27, 2019	June 28, 2019	March 29, 2019
Revenue	\$ 159,702	\$ 154,066	\$ 155,145	\$ 157,186
Cost of revenue	93,742	90,012	89,363	90,897
Gross profit	65,960	64,054	65,782	66,289
Operating expenses:				
Research and development and engineering	14,769	13,811	13,388	13,997
Selling, general and administrative	29,430	27,926	29,204	31,847
Amortization of purchased intangible assets	4,117	3,970	3,772	3,998
Restructuring and acquisition related costs	4,661	5,546	4,313	2,054
Total operating expenses	52,977	51,253	50,677	51,896
Operating income	12,983	12,801	15,105	14,393
Interest income (expense), foreign exchange transaction gains (losses) and other income (expense), net	(3,428)	(1,814)	(2,203)	(2,071)
Income before income taxes	9,555	10,987	12,902	12,322
Income tax provision	338	2,064	2,522	69
Net income	\$ 9,217	\$ 8,923	\$ 10,380	\$ 12,253
Earnings per common share:				
Basic	\$ 0.26	\$ 0.25	\$ 0.30	\$ 0.35
Diluted	\$ 0.26	\$ 0.25	\$ 0.29	\$ 0.35

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

None.

Item 9A. Controls and Procedures

The required certifications of our Chief Executive Officer and Chief Financial Officer are included in Exhibits 31.1 and 31.2 to this Annual Report on Form 10-K. The disclosures set forth in this Item 9A contain information concerning the evaluation of our disclosure controls and procedures, management's report on internal control over financial reporting and changes in internal control over financial reporting referred to in those certifications. Those certifications should be read in conjunction with this Item 9A for a more complete understanding of the matters covered by the certifications.

Evaluation of Disclosure Controls and Procedures as of December 31, 2020

Our management, with the participation of our Chief Executive Officer and Chief Financial Officer, conducted an evaluation of our disclosure controls and procedures, as such term is defined under Rule 13a-15(e) promulgated under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), as of December 31, 2020. Based on this evaluation, our Chief Executive Officer and Chief Financial Officer concluded that our disclosure controls and procedures were effective as of December 31, 2020.

Changes in Internal Control Over Financial Reporting

There has been no change to our internal control over financial reporting during the fiscal quarter ended December 31, 2020 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Management's Annual Report on Internal Control Over Financial Reporting

Management is responsible for establishing and maintaining adequate internal control over financial reporting, as defined in Rules 13a-15(f) under the Exchange Act. Internal control over financial reporting is designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external reporting purposes in accordance with generally accepted accounting principles. Internal control over financial reporting includes those policies and procedures that:

- pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect our transactions and dispositions of our assets;
- provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that our receipts and expenditures are being made only in accordance with authorizations of our management and directors; and
- provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of our 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 and that the degree of compliance with the policies or procedures may deteriorate.

Our management assessed the effectiveness of our internal control over financial reporting as of December 31, 2020. In making their assessment, our management utilized the criteria set forth in *Internal Control—Integrated Framework* issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO") in 2013. Based on our evaluation under the framework in *Internal Control—Integrated Framework*, issued by COSO in 2013, our management concluded that our internal control over financial reporting was effective as of December 31, 2020.

The effectiveness of our internal control over financial reporting as of December 31, 2020 has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their report which is contained in Item 8 of this Annual Report on Form 10-K.

Item 9B. Other Information

On February 25, 2021, the Company's Board of Directors (the "Board") amended and restated the Company's By-Law Number 1 (as amended and restated, the "Amended and Restated By-Laws") to make the following changes:

- Added provisions to permit notices and other Company documents to be delivered electronically.

- Added provisions to permit shareholders, directors, officers or any other person to sign Company documents using an electronic signature.
- Added provisions to permit any meeting required under the Business Corporations Act of New Brunswick, the Amended and Restated By-Laws, or any other law applicable to the Company, to be held as a virtual meeting or a hybrid meeting.
- Amended a provision to permit meetings of directors or committees of directors to be convened as virtual meetings or hybrid meetings, including any participation through electronic means where all persons participating can hear each other.
- Removed references to “unanimous shareholder agreement” throughout the Amended and Restated By-Laws.
- Enumerated additional potential officers that may be appointed by the Board, including a chief financial officer and a chief accounting officer, and enumerated the duties and powers of the chief financial officer.
- Removed a requirement that voting at a meeting of shareholders be conducted by a show of hands.
- Amended a provision to allow the Company’s listed securities to be eligible to be recorded and maintained on the books of its transfer agent without the issuance of a physical stock certificate.
- Removed a provision requiring the payment of cash dividends by check.
- Other immaterial or non-substantive administrative or clarifying changes.

The Amended and Restated By-Laws were effective immediately and will be submitted to the shareholders of the Company for confirmation at the 2021 Annual and Special Meeting of Shareholders.

The Amended and Restated By-Laws, along with a copy marked to show the changes from the prior version of the Company’s By-Law Number 1, as amended, are filed herewith as Exhibits 3.2 and 3.3, respectively. The above description of the changes contained in the Amended and Restated By-Laws is qualified by reference to the full text of the Amended and Restated By-Laws, which are incorporated herein by reference.

Certain information required by Part III is omitted from this Annual Report on Form 10-K and is incorporated herein by reference to the Company’s Definitive Proxy Statement for the 2021 Annual Meeting of Shareholders to be filed with the Securities and Exchange Commission.

PART III

Item 10. Directors, Executive Officers and Corporate Governance

All of the Company’s directors, officers and employees must act in accordance with the Code of Ethics and Business Conduct, which has been adopted by the Company’s Board of Directors. A copy of the Code of Ethics and Business Conduct is available on the Company’s website at <https://www.novanta.com> in the “About Us” section. (This website address is not intended to function as a hyperlink, and the information contained in our website is not intended to be a part of this filing). The Company will provide to any person without charge, upon request, a copy of the Code of Ethics and Business Conduct. Such a request should be made in writing and addressed to Novanta Inc., Attention: Investor Relations, 125 Middlesex Turnpike, Bedford, MA 01730, United States. The Company intends to satisfy the disclosure requirement under Nasdaq rules regarding waivers or under Item 5.05 of Form 8-K regarding disclosure of an amendment to, or waiver from, a provision of this Code of Ethics and Business Conduct, including with respect to its principal executive officer, principal financial officer, principal accounting officer or controller, or persons performing similar functions, by posting such information on the Company’s website at <https://www.novanta.com> in the “About Us” section, unless a Form 8-K is otherwise required by law or applicable listing rules.

The remainder of the response to this item is contained in the Proxy Statement for the Company’s Annual Meeting of Shareholders scheduled to be held on May 13, 2021 and is incorporated herein by reference.

Item 11. Executive Compensation

The information required to be disclosed by this item is contained in the Proxy Statement for the Company’s Annual Meeting of Shareholders scheduled to be held on May 13, 2021 and is incorporated herein by reference.

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

The information required to be disclosed by this item is contained in the Proxy Statement for the Company’s Annual Meeting of Shareholders scheduled to be held on May 13, 2021 and is incorporated herein by reference.

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

The information required to be disclosed by this item is contained in the Proxy Statement for the Company's Annual Meeting of Shareholders scheduled to be held on May 13, 2021 and is incorporated herein by reference.

Item 14. Principal Accounting Fees and Services

The information required to be disclosed by this item is contained in the Proxy Statement for the Company's Annual Meeting of Shareholders scheduled to be held on May 13, 2021 and is incorporated herein by reference.

PART IV**Item 15. Exhibits and Financial Statement Schedules****(a) Documents filed as part of this report:****1. List of Financial Statements**

The financial statements required by this item are listed in Item 8, "Financial Statements and Supplementary Data" herein.

2. List of Financial Statement Schedules

All schedules are omitted because they are not applicable or not required or the required information is shown in the consolidated financial statements or notes thereto.

3. List of Exhibits

Exhibit Number	Exhibit Description	Incorporated by Reference				Filed/ Furnished Herewith
		Form	File No.	Exhibit	Filing Date	
2.1	Agreement on the Sale and Transfer of all Shares in W.O.M. World of Medicine GmbH, dated June 6, 2017, between Novanta Europe GmbH, Novanta Inc., and Aton GmbH	8-K	001-35083	2.1	6/9/2017	
3.1	Certificate and Articles of Continuance of the Registrant, dated March 22, 1999	S-3	333-202597	3.1	3/9/2015	
3.2	By-Laws of the Registrant, as amended					*
3.3	Redlined By-Laws of the Registrant, as amended					*
3.4	Articles of Reorganization of the Registrant, dated July 23, 2010	8-K	000-25705	3.1	7/23/2010	
3.5	Articles of Amendment of the Registrant, dated December 29, 2010	8-K	000-25705	3.1	12/29/10	
3.6	Articles of Amendment of the Registrant, dated May 11, 2016	8-K	001-35083	10.1	5/12/2016	
4.1	Specimen Stock Certificate	10-K	001-35083	4.1	2/28/2018	
4.2	Form of Indenture, between the Registrant and Wilmington Trust, National Association	S-3	333-229912	4.3	2/27/2019	
4.3	Description of Common Shares	10-K	001-35083	4.3	2/26/2020	
10.1†	Novanta Inc. 2010 Incentive Award Plan (Amended and Restated Effective July 27, 2016)	10-Q	001-35083	10.1	08/02/2016	
10.2†	Form of Deferred Stock Unit Award Agreement	10-K	001-35083	10.59	3/30/2011	
10.3†	Restricted Stock Unit Inducement Award Grant Notice	S-8	333-194557	99.1	3/14/2014	
10.4†	Form of Stock Option Grant Notice and Stock Option Agreement	10-Q	001-35083	10.2	8/2/2016	

Exhibit Number	Exhibit Description	Incorporated by Reference				Filed/ Furnished Herewith
		Form	File No.	Exhibit	Filing Date	
10.5†	Form of U.S. Restricted Stock Unit Award Agreement	10-Q	001-35083	10.2	5/16/2011	
10.6†	Offer Letter, dated June 8, 2011, between GSI Group Inc. and Peter Chang	10-Q	001-35083	10.1	11/10/2011	
10.7	Amended and Restated Lease, dated May 1, 2012, by and between GSI Group Inc. and 125 Middlesex Turnpike, LLC	8-K	001-35083	10.1	5/4/2012	
10.8†	Form of Performance Stock Unit Award Grant Notice and Performance Stock Unit Award Agreement	10-Q	001-35083	10.3	8/2/2016	
10.9†	Severance Agreement, dated as of August 15, 2012, between GSI Group Inc. and Peter Chang	10-Q	001-35083	10.7	11/7/2012	
10.10	Third Amended and Restated Credit Agreement, dated as of December 31, 2019, by and among Novanta Corporation, Novanta Inc., Novanta UK Investments Holding Limited, Novanta Europe GmbH, Bank of America, N.A., as Administrative Agent, Swing Line Lender, L/C Issuer and lender, BofA Securities, Inc., as Joint Lead Arranger, JP Morgan Chase Bank, N.A., as Joint Lead Arranger, Co-Syndication Agent and lender, Wells Fargo Securities LLC, as Joint Lead Arranger, Wells Fargo Bank, National Association, as Co-Syndication Agent and lender, Silicon Valley Bank, as Co-Documentation Agent and lender, TD Bank, N.A., as Co-Documentation Agent and lender, Bank of Montreal, as Co-Documentation Agent and lender, and HSBC Bank USA, N.A. and HSBC Bank UK, as lenders	8-K	001-35083	10.1	1/3/2020	
10.11	Lease Agreement, dated as of May 31, 2013, by and between JADAK, LLC and Hancock Part Development, LLC	10-Q	001-35083	10.3	5/6/2014	
10.12†	Amended and Restated Employment Agreement, dated April 21, 2017, between Novanta Inc. and Matthijs Glastra	8-K	001-35083	10.1	4/24/2017	
10.13†	Amended and Restated Employment Agreement, dated April 21, 2017, between Novanta Inc. and Robert Buckley	8-K	001-35083	10.2	4/24/2017	
10.14†	Employment Agreement, dated April 21, 2017, between Novanta Inc. and Brian Young	8-K	001-35083	10.3	4/24/2017	
10.15†	Form of New Restricted Stock Unit Award Agreement	10-Q	001-35083	10.1	5/8/2017	
10.16†	Form of New Performance Stock Unit Award Grant Notice and Performance Stock Unit Award Agreement	10-Q	001-35083	10.2	5/8/2017	
10.17†	Form of Indemnification Agreement, by and between Novanta Inc. and certain officers and directors	10-Q	001-35083	10.2	11/1/2017	
10.18†	Form of Indemnification Agreement, by and between Novanta Corporation and certain officers and directors	10-Q	001-35083	10.3	11/1/2017	
10.19	First Amendment, dated May 7, 2018, to Amended and Restated Lease (dated as of May 1, 2012) by and between Novanta Corporation and 125 Middlesex Turnpike, LLC	10-Q	001-35083	10.2	5/8/2018	
10.20†	Novanta Inc. Non-Employee Director Compensation Policy	10-Q	001-35083	10.1	11/6/2018	
10.21†	Form of Director Restricted Stock Unit Award Grant Notice and Restricted Stock Unit Award Agreement	10-Q	001-35083	10.2	11/6/2018	

Exhibit Number	Exhibit Description	Incorporated by Reference				Filed/ Furnished Herewith
		Form	File No.	Exhibit	Filing Date	
10.22	First Amendment to Third Amended and Restated Credit Agreement, dated March 27, 2020	8-K	001-35083	10.1	3/31/2020	
10.23	Second Amendment to Third Amended and Restated Credit Agreement, dated June 2, 2020	10-Q	001-35083	10.1	8/6/2020	
21.1	Subsidiaries of the Registrant					*
23.1	Consent of Independent Registered Public Accounting Firm					*
31.1	Chief Executive Officer Certifications pursuant to Section 302 of the Sarbanes-Oxley Act of 2002					*
31.2	Chief Financial Officer Certifications pursuant to Section 302 of the Sarbanes-Oxley Act of 2002					*
32.1	Chief Executive Officer Certification pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002					**
32.2	Chief Financial Officer Certification pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002					**
101.INS	Inline eXtensible Business Reporting Language (XBRL) Instance Document – the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.					
101.SCH	Inline XBRL Taxonomy Extension Schema Document					*
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document					*
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document					*
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document					*
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document					*
104	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101).					*
†	This exhibit constitutes a management contract, compensatory plan, or arrangement.					
*	Filed herewith					
**	Furnished herewith					

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.

Novanta Inc.

By: /s/ Matthijs Glastra
Matthijs Glastra
Chief Executive Officer

Date: March 1, 2021

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.

Novanta Inc. (Registrant)

Name	Title	Date
<u>/s/ Matthijs Glastra</u> Matthijs Glastra	Director, Chief Executive Officer	March 1, 2021
<u>/s/ Robert J. Buckley</u> Robert J. Buckley	Chief Financial Officer	March 1, 2021
<u>/s/ Peter L. Chang</u> Peter L. Chang	Chief Accounting Officer and Corporate Controller	March 1, 2021
<u>/s/ Stephen W. Bershad</u> Stephen W. Bershad	Chairman of the Board of Directors	March 1, 2021
<u>/s/ Lonny J. Carpenter</u> Lonny J. Carpenter	Director	March 1, 2021
<u>/s/ Deborah DiSanzo</u> Deborah DiSanzo	Director	March 1, 2021
<u>/s/ Brian D. King</u> Brian D. King	Director	March 1, 2021
<u>/s/ Ira J. Lamel</u> Ira J. Lamel	Director	March 1, 2021
<u>/s/ Maxine L. Mauricio</u> Maxine L. Mauricio	Director	March 1, 2021
<u>/s/ Katherine A. Owen</u> Katherine A. Owen	Director	March 1, 2021
<u>/s/ Thomas N. Secor</u> Thomas N. Secor	Director	March 1, 2021

NOVANTA INC.

AMENDED AND RESTATED BY-LAW NUMBER 1

A by-law relating generally to the regulation of the affairs of Novanta Inc.

BE IT ENACTED AND IT IS HEREBY ENACTED as amended and restated by-law Number 1 of Novanta Inc. (hereinafter called the "Corporation") as follows:

DEFINITIONS

1. In this by-law and all other by-laws of the Corporation, unless the context otherwise specifies or requires:

- (a) "Act" means the Business Corporations Act, Statutes of New Brunswick, 1981, c. B-9.1, as from time to time amended, and every statute that may be substituted therefor and, in the case of such amendment or substitution, any reference in the by-laws of the Corporation shall be read as referring to the amended or substituted provisions thereof;
- (b) "articles" means the articles, as from time to time amended, of the Corporation;
- (c) "by-law" means any by-law of the Corporation from time to time in force and effect;
- (d) "director" means an individual occupying the position of director of the Corporation and "directors", "board of directors" and "board" includes a single director;
- (e) words importing the singular number only shall include the plural and vice versa; words importing the masculine gender shall include the feminine and neuter genders and vice versa; words importing persons shall include bodies corporate, corporations, companies, partnerships, syndicates, trusts and any number or aggregate of individuals;
- (f) the headings used in any by-law are inserted for reference purposes only and are not to be considered or taken into account in construing the terms or provisions thereof or to be deemed in any way to clarify, modify or explain the effect of any such terms or provisions; and
- (g) any term contained in any by-law which is defined in the Act shall have the meaning given to such term in the Act.

ELECTRONIC COMMUNICATIONS

2. Electronic Communication. Any notices, financial statements and any other document, information or material, including any proxy, required or permitted by the Act, the by-laws of the Corporation or any other law applicable to the Corporation to be in writing or delivered to a person may be in electronic form and delivered electronically and any such notice, document, information and material shall be deemed delivered to the recipient when such notice, document, information or material, in electronic form, enters an information system outside the control of the Corporation.

3. Electronic Signature. Where any provision of the Act, the by-laws of the Corporation or any other law applicable to the Corporation requires that a document be executed by a shareholder, director, officer or any other person or their authorized representative, such requirement may be satisfied by an electronic signature.

4. Virtual Meetings. Where any provision of the Act, the by-laws of the Corporation or any other law applicable to the Corporation requires or provides for a meeting, such meeting may be convened as a virtual meeting or a hybrid meeting.

5. Interpretation. For the purposes of this by-law:

- (a) "electronic form" includes any document that is in digital or optical form;
- (b) "delivered electronically" includes delivery by email or facsimile transmission or by posting on an electronic network that is accessible by recipient and is capable of being retained by the recipient, together with separate notice of such specified posting;
- (c) "electronic signature" means electronic information that a person has created or adopted in order to indicate his or her assent to the document and is attached to or associated with the document and includes, but is not limited to, an electronic representation of the manual signature of the person signing the document.
- (d) "hybrid meeting" means a meeting convened at a specified physical location where persons participating in the meeting may choose to either attend in person or participate through electronic means.
- (e) "participating through electronic means" or words of similar effect means either participation over the internet or using other means of electronic communication, including video or telephone conference, whereby all persons participating can hear each other and, where applicable, can vote.
- (e) "virtual meeting" means a meeting that is not convened at any physical location and all participants participate through electronic means.

REGISTERED OFFICE

6. The Corporation may from time to time by resolution of the board of directors change the location of the address of the registered office of the Corporation to another place within New Brunswick.

CORPORATE SEAL

7. The Corporation may have one or more corporate seals which shall be such as the board of directors may adopt by resolution from time to time.

DIRECTORS

8. *Number and Powers.* There shall be a board of directors consisting of such fixed number, or minimum and maximum number, of directors as may be set out in the articles or as may be determined as prescribed by the articles, or failing that, as specified by by-law. The directors shall manage the business and affairs of the Corporation and may exercise all such powers and do all such acts and things as may be exercised or done by the Corporation and are not by the Act, the articles, the by-laws, any special resolution of the Corporation or by statute expressly directed or required to be done in some other manner.

9. *Vacancies.* If the number of directors is increased, the resulting vacancies shall be filled at a meeting of shareholders duly called for that purpose. Notwithstanding the provisions of paragraph 13 of this by-law and subject to the provisions of the Act, if a vacancy should otherwise occur in the board, the remaining directors, if constituting a quorum, may appoint a qualified person to fill the vacancy for the remainder of the term. In the absence of a quorum the remaining directors shall forthwith call a meeting of shareholders to fill the vacancy pursuant to subsection 69(2) of the Act. Where a vacancy or vacancies exist in the board, the remaining directors may exercise all of the powers of the board so long as a quorum remains in office.

10. *Duties.* Every director and officer of the Corporation in exercising his or her powers and discharging his or her duties shall

- (a) act honestly and in good faith; and
- (b) exercise the care, diligence and skill that a reasonably prudent person would exercise in comparable circumstances, in the best interests of the Corporation.

11. *Qualification.* Every director shall be an individual nineteen (19) or more years of age and no one who is of unsound mind and has been so found by a court in Canada or elsewhere or who has the status of a bankrupt or who has been convicted of an offence under the Criminal Code, chapter C-34 of the Revised Statutes of Canada, 1970, as amended from time to time, or the criminal law of any jurisdiction outside of Canada, in connection with the promotion, formation or management of a corporation or involving fraud (unless five (5) years have elapsed since the expiration of the period fixed for suspension of the passing of sentence without sentencing or since a fine was imposed, or unless the term of imprisonment and probation imposed, if any, was concluded, whichever is the latest, but the disability imposed hereby ceases upon a pardon being granted) shall be a director.

12. *Term of Office.* A director's term of office shall be from the meeting at which the director is elected or appointed (unless the board of directors has specified a later effective date for a director appointed by the board of directors) until the annual meeting next following or until a successor is elected or appointed, or until, if earlier, the director dies or resigns, or is removed or disqualified pursuant to the provisions of the Act.

13. *Vacation of Office.* The office of a director shall ipso facto be vacated if

- (a) the director dies;
- (b) by notice in writing (which may include an electronic form) to the Corporation the director resigns the office and such resignation, if not effective immediately, becomes effective in accordance with its terms;
- (c) the director is removed from office in accordance with section 67 of the Act; or
- (d) the director ceases to be qualified to be a director.

14. *Election and Removal.* (1) Directors shall be elected by the shareholders by a resolution passed by a majority of the votes cast at a general meeting. An abstention, vote withheld or broker non-vote shall not be considered a vote cast. All the directors then in office shall cease to hold office at the close of the meeting of shareholders at which directors are to be elected. A director if qualified, is eligible for re-election.

(2) Subject to sections 65 and 67 of the Act, the shareholders of the Corporation may, by resolution passed by a majority of the votes cast at an annual or a special meeting, remove any director before the expiration of the director's term of office and may, by a majority of the votes cast at the meeting, elect any person to serve in such director's place for the remainder of the director's term. An abstention, vote withheld or broker non-vote shall not be considered a vote cast.

(3) Each shareholder entitled to vote at an election of directors has the right to cast a number of votes equal to the number of votes attached to the shares held by such shareholder multiplied by the number of directors to be elected, and the shareholder may cast all such votes in favour of one candidate or distribute them among the candidates in any manner.

(4) A separate vote of shareholders shall be taken with respect to each candidate nominated for director unless a resolution is passed unanimously permitting two (2) or more persons to be elected by a single resolution.

(5) If a shareholder has voted for more than one candidate without specifying the distribution of the votes among the candidates, the shareholder shall be deemed to have distributed the votes equally among the candidates for whom the shareholder voted.

(6) If the number of candidates nominated for director exceeds the number of positions to be filled, the candidates who receive the least number of votes shall be eliminated until the number of candidates remaining equals the number of positions to be filled.

(7) A retiring director shall retain office until the adjournment or termination of the meeting at which such retiring director's successor is elected unless such meeting was called for the purpose of removing the director from office as a director in which case the director so removed shall vacate office forthwith upon the passing of the resolution for removal.

15. *Validity of Acts.* An act by a director or officer is valid notwithstanding an irregularity in the election or appointment of such director or officer or a defect in their qualification.

MEETINGS OF DIRECTORS

16. *Place of Meeting.* Subject to the articles, meetings of directors may be held at any place within or outside New Brunswick as the directors may from time to time determine or as the person convening the meeting may give notice. A meeting of the directors may be convened by the chairperson of the board (if any), the chief executive officer (if any), the president (if any) or any director at any time. The secretary (if any) shall upon direction of any of the foregoing officers or director convene a meeting of the directors.

17. *Notice.* (1) Notice of the time and place of each meeting of the board shall be given in the manner provided in paragraph 65 to each director:

(a) not less than three (3) days before the time when the meeting is to be held, if the notice is mailed, or

(b) not less than twenty-four (24) hours before the time when the meeting is to be held if the notice is given personally or is delivered or is sent by any means of transmitted or recorded communication, such as facsimile transmission, voicemail or electronic-mail,

provided that meetings of the directors may be held at any time without notice if all the directors have waived notice.

(2) For the first meeting of the board of directors to be held immediately following the election of directors at an annual or special meeting of the shareholders, no notice of such meeting need be given to the newly elected or appointed director or directors in order for the meeting to be duly constituted, provided a quorum of the directors is present.

(3) A notice of a meeting of directors shall specify any matter referred to in subsection 73(2) of the Act that is to be dealt with at the meeting but, unless a by-law otherwise provides, need not otherwise specify the purpose of or the business to be transacted at the meeting.

18. *Waiver of Notice.* Notice of any meeting of the directors or any irregularity in any meeting or in the notice thereof may be waived by any director in writing or in electronic form addressed to the Corporation or in any other manner, and such waiver may be validly given either before or after the meeting to which such waiver relates. The attendance of a director at a meeting of directors is a waiver of notice of the meeting except where a director attends a meeting for the express purpose of objecting to the transaction of any business on the grounds that the meeting is not lawfully called.

19. *Virtual Meetings and Electronic Participation.* Meetings of directors or of a committee of directors may be convened as virtual meetings or hybrid meetings. Further, any director may participate in any meeting through electronic means, either over the internet or using other means of electronic communication where all persons participating can hear each other and a director participating in such a meeting by such means shall be deemed to be present at that meeting.

20. *Adjournment.* Any meeting of the directors may be adjourned from time to time by the chairperson of the meeting, with the consent of the meeting, to a fixed time and place and no notice of the time and place for the continuance of the adjourned meeting need be given to any director if the time and place of the adjourned meeting is announced at the original meeting. Any adjourned meeting shall be duly constituted if held in accordance with the terms of the adjournment and a quorum is present thereat. The directors who formed a quorum at the original meeting are not required to form the quorum at the adjourned meeting. If there is no quorum present at the adjourned meeting, the original meeting shall be deemed to have terminated forthwith after its adjournment.

21. *Quorum and Voting.* Subject to the articles, a majority of directors shall constitute a quorum for the transaction of business at any meeting of directors. No business shall be transacted by the directors except at a meeting of directors at which a quorum of the board is present. Questions arising at any meeting of the directors shall be decided by a majority of votes cast. In case of an equality of votes, the chairperson of the meeting shall not have a second or casting vote. Where the Corporation has only one director, that director may constitute a meeting.

22. *Resolution in lieu of meeting.* A resolution in writing, signed by all the directors (including by electronic signature) or signed counterparts of such resolution by all the directors entitled to vote on that resolution at a meeting of directors or a committee of directors, is as valid as if it had been passed at a meeting of directors or committee of directors duly called, constituted and held. A copy of every such resolution or counterpart thereof shall be kept with the minutes of the proceedings of the directors or such committee of directors.

23. *Deemed Consent of Director Present at Meeting.* A director who is present at a meeting of directors or committee of directors is deemed to have consented to any resolution passed or action taken thereat unless the director:

- (a) requests that the director's dissent be or the director's dissent is entered in the minutes of the meeting;
- (b) sends the director's written dissent to the secretary of the meeting before the meeting is terminated; or
- (c) sends the director's dissent by registered mail or delivers to the registered office of the Corporation immediately after the meeting is terminated.

REMUNERATION OF DIRECTORS

24. Subject to the articles, the remuneration to be paid to the directors shall be such as the board of directors shall from time to time determine and such remuneration shall be in addition to the salary paid to any officer of the Corporation who is also a member of the board of directors. The directors may also by resolution award special remuneration to any director undertaking any special services on the Corporation's behalf other than the routine work ordinarily required of a director by the Corporation. The confirmation of any such resolution or resolutions by the shareholders shall not be required. The directors shall also be entitled to be paid their travelling and other expenses properly incurred by them in connection with the affairs of the Corporation.

SUBMISSION OF CONTRACTS OR TRANSACTIONS
TO SHAREHOLDERS FOR APPROVAL

25. The directors in their discretion may submit any contract, act or transaction for approval, ratification or confirmation at any annual meeting of the shareholders or at any special meeting of the shareholders called for the purpose of considering the same and any contract, act or transaction that shall be approved, ratified or confirmed by resolution passed by a majority of the votes cast at any such meeting (unless any different or additional requirement is imposed by the Act or by the articles or any other by-law) shall be as valid and as binding

upon the Corporation and upon all the shareholders as though it had been approved, ratified and/or confirmed by every shareholder of the Corporation.

FOR THE PROTECTION OF DIRECTORS AND OFFICERS

26. No director or officer for the time being of the Corporation shall be liable for the acts, receipts, neglects or defaults of any other director or officer or employee of the Corporation or for joining in any receipt or act for conformity or for any loss, damage or expense happening to the Corporation through the insufficiency or deficiency of title to any property acquired by order of the board of directors for or on behalf of the Corporation or for the insufficiency or deficiency of any security in or upon which any of the moneys of or belonging to the Corporation shall be placed out or invested or for any loss or damage arising from the bankruptcy, insolvency or tortious act of any person, firm or corporation including any person, firm or corporation with whom or which any moneys, securities or effects of the Corporation shall be lodged or deposited or for any loss, conversion, misapplication or misappropriation of or any damage resulting from any dealings with any moneys, securities or other assets belonging to the Corporation or for any other loss, damage or misfortune whatever which may happen to the Corporation in the execution of the duties of their respective office of trust or in relation thereto, unless the same shall happen by or through their failure to exercise the powers and to discharge the duties of their office honestly, in good faith with a view to the best interests of the Corporation, and in connection therewith to exercise the care, diligence and skill that a reasonably prudent person would exercise in comparable circumstances, provided that nothing herein contained shall relieve a director or officer from the duty to act in accordance with the Act or regulations made thereunder or relieve the director or officer from liability for a breach thereof. The directors for the time being of the Corporation shall not be under any duty or responsibility in respect of any contract, act or transaction whether or not made, done or entered into in the name or on behalf of the Corporation, except such as shall have been submitted to and authorized or approved by the board of directors. If any director or officer of the Corporation shall be employed by or shall perform services for the Corporation, the fact of the director or officer being a shareholder, director or officer of the Corporation shall not disentitle such director or officer or such firm or body corporate, as the case may be, from receiving proper remuneration for such services.

INDEMNITIES TO DIRECTORS AND OTHERS

27. Subject to section 81 of the Act, except in respect of an action by or on behalf of the Corporation or Another Body Corporate (as hereinafter defined) to procure a judgement in its favour, the Corporation shall indemnify each director and officer of the Corporation and each former director and officer of the Corporation and each person who acts or acted at the Corporation's request as a director or officer of Another Body Corporate, and the heirs and legal representatives of such director or officer, against all costs, charges and expenses, including any amount paid to settle an action or satisfy a judgment, reasonably incurred in respect of any civil, criminal or administrative action or proceeding to which such person is made a party by reason of being or having been a director or officer of the Corporation or Another Body Corporate, as the case may be, if

(a) the person acted honestly and in good faith with a view to the best interests of the Corporation; and

(b) in the case of a criminal or administrative action or proceeding that is enforced by a monetary penalty, the person had reasonable grounds for believing that their conduct was lawful.

"Another Body Corporate" as used herein means a body corporate of which the Corporation is or was a shareholder or creditor.

28. *Insurance.* Subject to the limitations contained in the Act, the Corporation may purchase and maintain such insurance for the benefit of any person referred to in paragraph 27 as the board may, from time to time, determine.

OFFICERS

29. *Appointment of Officers.* Subject to the articles, the directors may appoint a chairperson of the board, a chief executive officer, president, chief financial officer, and a secretary and, if deemed advisable, may also appoint one or more vice-presidents, chief accounting officer, a treasurer and one or more assistant secretaries and/or one or more assistant treasurers. None of such officers, except the chairperson of the board, need be a director of the Corporation. Any two or more of such offices may be held by the same person. In case and whenever the same person holds the offices of secretary and treasurer, the person may, but need not, be known as the secretary-treasurer. The directors may from time to time designate such other offices and appoint such other officers, employees and agents as it shall deem necessary who shall have such authority and shall perform such functions and duties as may from time to time be prescribed by resolution of the directors.

30. *Remuneration and Removal of Officers.* Subject to the articles, the remuneration of all officers, employees and agents appointed by the directors may be determined from time to time by resolution of the directors. The fact that any officer, employee or agent is a director or shareholder of the Corporation shall not disqualify such person from receiving such remuneration as may be so determined. The directors may by resolution remove any officer, employee or agent at any time, with or without cause.

31. *Duties of Officers may be Delegated.* In case of the absence or inability or refusal to act of any officer of the Corporation or for any other reason that the directors may deem sufficient, the directors may delegate all or any of the powers of such officer to any other officer or to any director for the time being.

32. *Chairperson of the Board.* The chairperson of the board (if any) shall, if present, preside at all meetings of the directors. The chairperson shall sign such contracts, documents or instruments in writing as requiring chairperson's signature and shall have such other powers and duties as may from time to time be assigned to the chairperson by resolution of the directors.

33. *Chief Executive Officer.* The chief executive officer of the Corporation shall exercise general supervision over the business and affairs of the Corporation and such other duties as the board may specify from time to time. During the absence or disability of the president, or if no president has been appointed, the chief executive officer shall also have the powers and duties of that office. During the absence or disability of the secretary, or if no secretary has been appointed, the chief executive officer shall also have the powers and duties of that office.

34. *President.* The president (if any) of the Corporation shall be the chief operating officer and shall, subject to the authority of the Chief Executive Officer, exercise general supervision over the operations of the Corporation. During the absence or disability of the chief executive officer, or if no chief executive officer has been appointed, the president shall also have the powers and duties of that office.

35. *Vice-President.* The vice-president (if any) or, if more than one, the vice-presidents in order of seniority, shall be vested with all the powers and shall perform all the duties of the president in the absence or inability or refusal to act of the president. The vice-president or, if more than one, the vice-presidents in order of seniority, shall sign such contracts, documents or instruments in writing as require their signatures and shall also have such other powers and duties as may from time to time be assigned to them by resolution of the directors.

36. *Chief Financial Officer.* Subject to the provisions of any resolution of the directors, the chief financial officer shall have the care and custody of all the funds and securities of the Corporation and shall deposit the same in the name of the Corporation in such bank or banks or with such other depository or depositories as the directors may by resolution direct, or shall oversee the treasurer (if any) in the treasurer's performance of such duties. The chief financial officer shall prepare, maintain and keep or cause to be kept adequate books of accounts and accounting records and shall provide such financial information analyses and budgeting and other financial support and forecasting as may be required from time to time by the board of directors or the chief executive officer. The chief financial officer shall sign such contracts, documents or instruments in writing as require the chief financial officer's signature and shall have such other powers and duties as may from time to time be assigned to him by resolution of the directors or as are incident to the office.

37. *Treasurer.* The treasurer (if any) shall under the direction of the chief financial officer administer the funds and securities of the Corporation and shall deposit the same in the name of the Corporation in such bank or banks or with such other depository or depositories as the directors may by resolution direct. The treasurer shall prepare, maintain and keep or cause to be kept adequate books of accounts and accounting records. The treasurer shall sign such contracts, documents or instruments in writing as require the treasurer's signature and shall have such other powers and duties as may from time to time be assigned to him by resolution of the directors or as are incident to the office. The treasurer may be required to give such bond for the faithful performance of the treasurer's duties as the directors in their uncontrolled discretion may require, but no director shall be liable for failure to require any such bond or for the insufficiency of any such bond or for any loss by reason of the failure of the Corporation to receive any indemnity thereby provided.

38. *Secretary.* The secretary (if any) shall give or cause to be given notices for all meetings of the directors or committees thereof (if any) and of shareholders when directed to do so, and shall have charge, subject to the provisions of paragraphs 37 and 58 hereof, of the records referred to in section 18 of the Act and of the corporate seal or seals (if any). The secretary shall sign such contracts, documents or instruments in writing as required and shall have such other powers and duties as may from time to time be assigned by resolution of the directors or as are incident to the office of the secretary.

39. *Assistant Secretary and Assistant Treasurer.* The assistant secretary or, if more than one, the assistant secretaries in order of seniority, and the assistant treasurer or, if more than one, the assistant treasurers in order of seniority (if any), shall respectively perform all the duties of the secretary and treasurer, respectively, in the absence or inability to act of the secretary or treasurer as the case may be. The assistant secretary or assistant secretaries, if more than one, and the assistant treasurer or assistant treasurers, if more than one, shall sign such contracts, documents or instruments in writing as require their signature(s) respectively and shall have such other powers and duties as may from time to time be assigned to them by resolution of the directors.

40. *Vacancies.* If the office of chairperson of the board, chief executive officer, president, vice-president, secretary, assistant secretary, treasurer, assistant treasurer, or any other office created by the directors pursuant to paragraph 29 hereof, shall be or become vacant by reason of death, resignation, removal or in any other manner whatsoever, the directors may, subject to paragraph 29 hereof, appoint another person to fill such vacancy.

COMMITTEES OF DIRECTORS

41. The directors may from time to time appoint from among themselves one or more committees of directors consisting of one or more individuals and delegate to such committee or committees any of the powers of the directors except as provided in subsection 73(2) of the Act. Unless otherwise ordered by the directors, a committee of directors shall have power to fix its quorum, elect its chairperson and regulate its proceedings. All such committees shall report to the directors as required by them.

SHAREHOLDERS' MEETING

42. *Annual Meeting.* Subject to compliance with section 85 of the Act, the annual meeting of the shareholders shall be convened on such day in each year and at such time as the directors may by resolution determine or as otherwise specified in the notice of meeting.

43. *Special Meetings.* (1) Special meetings of the shareholders may be convened by order of the chairperson of the board, the chief executive officer or the president (if any) or by the directors, to be held at such time and place as may be specified in the notice of meeting.

(2) In accordance with the articles, shareholders holding between them not less than ten percent (10%) of the issued shares of the Corporation that carry the right to vote at a meeting sought to be held may requisition the

directors to call a meeting of shareholders. Such requisition shall state the business to be transacted at the meeting and shall be sent to each director and the registered office of the Corporation.

(3) Except as otherwise provided in subsection 96(3) of the Act, it shall be the duty of the directors on receipt of such requisition, to cause such meeting to be called by the secretary of the Corporation.

(4) If the directors do not, within twenty-one (21) days after receiving such requisition call such meeting, any shareholder who signed the requisition may call the meeting.

44. *Place of Meetings.* Meetings of shareholders of the Corporation may be conducted as virtual meetings, hybrid meetings or fully in-person meetings as the directors by resolution may determine or as otherwise specified in the notice calling the meeting. Except in the case of a virtual meeting, a meeting shall be convened at such place within or outside New Brunswick as the directors by resolution may determine or as otherwise specified in the notice calling the meeting.

45. *Notice.* (1) Subject to the articles, a notice stating the day, hour, place (if any) of meeting, the method of participating through electronic means (if any), the general nature of the business to be transacted and, if special business is to be transacted thereat, stating

(a) the nature of that business in sufficient detail to permit the shareholder to form a reasoned judgment thereon; and

(b) the text of any special resolution to be submitted to the meeting,

shall be sent to each person who is entitled to notice of such meeting and who on the record date for notice appears on the records of the Corporation or its transfer agent as a shareholder and to each director of the Corporation and the auditor of the Corporation, if any, personally, by sending such notice by prepaid mail, in electronic form, or by a posting on an electronic network together with sending separate notice of such specific posting, or in such other manner as provided by by-law for the giving of notice, not less than twenty-one (21) days nor more than fifty (50) days before the meeting. Such notice shall be addressed to the latest address (including, if applicable, email address or other address for sending in electronic form) of each such person as shown in the records of the Corporation or its transfer agent, or if no address is shown therein, then to the last address of each such person known to the Corporation or its transfer agent.

(2) The auditor of the Corporation, if any, is entitled to attend any meeting of shareholders of the Corporation and to receive all notices and other communications relating to any such meeting that a shareholder is entitled to receive.

46. *Waiver of Notice.* A meeting of shareholders may be held for any purpose at any time and, subject to section 84 of the Act, at any place or virtually without notice if all the shareholders entitled to notice of such meeting are either present in person, physically or participating through electronic means, or represented by proxy at the meeting (except where the shareholder attends the meeting for the express purpose of objecting to the transaction of any business on the grounds that the meeting is not lawfully called) or if all the shareholders entitled to notice of such meeting and not present in person nor represented by proxy thereat waive notice of the meeting. Notice of any meeting of shareholders or any irregularity in any such meeting or in the notice thereof may be waived by any shareholder, the duly appointed proxy of any shareholder, any directors or the auditor of the Corporation in writing or electronic form addressed to the Corporation or by any other manner, and any such waiver may be validly given either before or after the meeting to which such waiver relates.

47. *Omission of Notice.* The accidental omission to give notice of any meeting to or the non-receipt of any notice by any person shall not invalidate any resolution passed or any proceeding taken at any meeting of shareholders.

48. *Record Date.* (1) The directors may by resolution fix in advance a date as the record date for the determination of shareholders

(a) entitled to receive payment of a dividend;

- (b) entitled to participate in a liquidation distribution; or
- (c) for any other purpose except the right to receive notice of or to vote at a meeting of shareholders,

but such record date shall not precede by more than fifty (50) days the particular action to be taken.

(2) The directors may by resolution also fix in advance the date as the record date for the determination of shareholders entitled to receive notice of a meeting of shareholders, but such record date shall not precede by more than fifty (50) days or by less than twenty-one (21) days the date on which the meeting is to be held.

(3) If no record date is fixed,

- (a) the record date for the determination of shareholders entitled to receive notice of a meeting of shareholders shall be
 - (i) at the close of business on the day immediately preceding the day on which the notice is given; or
 - (ii) if no notice is given, the day on which the meeting is held; and

- (b) the record date for the determination of shareholders for any purpose, other than that specified in subparagraph (a) above or to vote, shall be at the close of business on the day on which the directors pass the resolution relating thereto.

49. *Voting.* (1) Votes at meetings of the shareholders may be given either personally, by electronic means or by proxy. At every meeting at which a shareholder is entitled to vote, every shareholder present in person and every proxyholder shall have one (1) vote unless a poll is conducted in which case every shareholder present in person or by proxy and entitled to vote shall (subject to the provisions, if any, of the articles) have one (1) vote for every share registered in the shareholder's name.

(2) Voting at a meeting of shareholders shall be conducted in the manner determined by the chairperson of the meeting except where a ballot is demanded by a shareholder or proxyholder entitled to vote at the meeting. A shareholder or proxyholder may demand a ballot either before or after any vote. In case of an equality of votes the chairperson of the meeting shall not have a second or casting vote in addition to the vote or votes to which the chairperson may be entitled as a shareholder or proxyholder.

(3) At any meeting, unless a ballot is demanded, a declaration by the chairperson of the meeting that a resolution has been carried or carried unanimously or by a particular majority or lost or not carried by a particular majority shall be conclusive evidence of the fact without proof of the number or proportion of votes recorded in favour of or against the motion.

(4) In the absence of the chairperson of the board, the chief executive officer, the president (if any), the chief financial officer, and every vice-president, the shareholders present entitled to vote shall choose another director as chairperson of the meeting and if no director is present or if all the directors present decline to take the chair then the shareholders or proxyholders present shall choose a person to be chairperson from among the shareholders and proxyholders present.

(5) If at any meeting a ballot is demanded on the election of a chairperson or on the question of adjournment or termination it shall be taken forthwith without adjournment. If a ballot is demanded on any other question or as to the election of directors it shall be taken in such manner and either at once or later at the meeting or at an adjourned meeting as the chairperson of the meeting directs. The result of a ballot shall be deemed to be the resolution of the meeting at which the ballot was demanded. A demand for a ballot may be withdrawn.

(6) Where a person holds shares as a personal representative, such person or the proxy of such person is the person entitled to vote at all meetings of shareholders in respect of the shares so held by such person.

(7) Where a person mortgages or hypothecates the person's shares, such person or the proxy of such person is the person entitled to vote at all meetings of shareholders in respect of such shares unless, in the instrument creating the mortgage or hypothec, such person has expressly empowered the person holding the mortgage or hypothec to vote in respect of such shares, in which case, and subject to the articles, such holder or the proxy of such holder is the person entitled to vote in respect of the shares.

(8) Where two or more persons hold the same share or shares jointly, any one of such persons present at a meeting of shareholders has the right, in the absence of the other or others, to vote in respect of such share or shares, but if more than one of such persons are present or represented by proxy and vote, they shall vote together as one on the share or shares jointly held by them.

50. *Proxies.* (1) A shareholder, including a shareholder that is a body corporate, entitled to vote at a meeting of shareholders may by means of a proxy appoint a proxyholder or one or more alternate proxyholders, none of whom are required to be a shareholder of the Corporation, which proxyholders shall have all the rights of the shareholder to attend and act at the meeting in the place and stead of the shareholder except to the extent limited by the proxy.

(2) An instrument appointing a proxy shall be in writing, which may be in electronic form, and shall be executed (which may be by electronic signature) by the shareholder or by the shareholder's attorney authorized in writing (which may be in electronic form) or, if the shareholder is a body corporate, either under its seal or by an officer or attorney thereof, duly authorized. A proxy is valid only at the meeting in respect of which it is given or any adjournment thereof.

(3) Unless the Act requires another form, an instrument appointing a proxyholder shall be in the form determined by the directors from time to time.

51. *Time for Deposit of Proxies.* The board may by resolution specify in a notice calling a meeting of shareholders a time, preceding the time of such meeting or an adjournment thereof by not more than 48 hours excluding Saturdays and holidays before which time proxies to be used at such meeting must be deposited. A proxy shall be acted upon only if, prior to the time so specified, it shall have been deposited with the Corporation or an agent thereof specified in such notice or, if no such time is specified in such notice, only if it has been received by the secretary of the Corporation or by the chairperson of the meeting or any adjournment thereof prior to the time of voting.

52. The directors may from time to time adopt resolutions regarding the depositing of proxies at some place or places other than the place at which a meeting or adjourned meeting of shareholders is to be held and for particulars of such proxies to be sent by means of wire or wireless or any other form of transmitted or recorded communication or in writing before the meeting or adjourned meeting to the Corporation or any agent of the Corporation for the purpose of receiving such particulars and providing that proxies so deposited may be voted upon as though the proxies themselves were deposited with the Corporation at the meeting or adjourned meeting and votes given in accordance with such regulations shall be valid and shall be counted. The chairperson of any meeting of shareholders may, subject to any regulations made as aforesaid, in the chairperson's discretion accept wire or wireless or any other form of transmitted or recorded or written communication as to the authority of any person claiming to vote on behalf of and to represent a shareholder notwithstanding that no proxy conferring such authority has been deposited with the Corporation, and any votes given in accordance with such communication accepted by the chairperson of the meeting shall be valid and shall be counted.

53. *Adjournment.* (1) The chairperson of the meeting may with the consent of the meeting adjourn any meeting of shareholders from time to time to a fixed time and place, or no place in the case of a virtual meeting. If a meeting of shareholders is adjourned for less than sixty (60) days, it is not necessary to give notice of the adjourned meeting other than by announcement at the earlier meeting that is adjourned. If a meeting of shareholders is adjourned by one or more adjournments for an aggregate of sixty (60) days or more, notice of the adjourned meeting shall be given as for an original meeting.

(2) Any adjourned meeting shall be duly constituted if held in accordance with the terms of the adjournment and a quorum is present at the opening thereof. The persons who formed a quorum at the original meeting are not required to form the quorum at the adjourned meeting. If there is no quorum present at the opening of the adjourned meeting, the original meeting shall be deemed to have terminated forthwith after its adjournment. Any business may be brought before or dealt with at any adjourned meeting which might have been brought before or dealt with at the original meeting in accordance with the notice calling the same.

54. *Quorum.* The holders of at least 33-1/3% of the shares entitled to vote at the meeting, present personally (either physically or participating through electronic means) or represented by proxy, shall constitute a quorum of any meeting of shareholders or of any class of shareholders. No business shall be transacted at any meeting unless the requisite quorum be present at the time of the transaction of such business. If a quorum is not present at the time appointed for a meeting of shareholders or within such reasonable time thereafter as the shareholders present may determine, the chairperson of the meeting may adjourn the meeting to a fixed time and place but may not transact any other business and the provisions of paragraph 45 of this by-law with regard to notice shall apply to such adjournment.

55. *Resolution in Lieu of meeting.* A resolution in writing signed by all the shareholders or signed counterparts of such resolution by all the shareholders entitled to vote on that resolution at a meeting of shareholders is as valid as if it had been passed at a meeting of the shareholders duly called, constituted and held. A copy of every such resolution or counterpart thereof shall be kept with the minutes of the meetings of shareholders.

SHARES AND TRANSFERS

56. *Issuance.* Subject to the articles and to section 27 of the Act, shares in the Corporation may be issued at such times and to such persons or classes of persons and, subject to sections 23 and 24 of the Act, for such consideration as the directors may determine.

57. *Certificates.* Share certificates (and the form of stock transfer power on the reverse side thereof) shall (subject to compliance with section 47 of the Act) be in such form and be signed by such director(s) or officer(s) as the directors may from time to time by resolution determine. Such certificates shall be signed by at least one director or officer of the Corporation or by or on behalf of a registrar, transfer agent or branch transfer agent of the Corporation, and any additional signatures required on a share certificate may be printed or otherwise mechanically reproduced thereon. If a share certificate contains a printed or mechanically reproduced signature of a person, the Corporation may issue the share certificate notwithstanding that the person has ceased to be a director or an officer of the Corporation, and the share certificate is as valid as if the person were a director or an officer at the date of its issue. The Corporation may allow its listed securities to be eligible to be recorded and maintained on the books of its transfer agent without the issuance of a physical stock certificate.

58. *Registrar and Transfer Agent.* The directors may from time to time by resolution appoint or remove one or more registrars and/or branch registrars (which may but need not be the same person) to keep the share register and/or one or more transfer agents and/or branch transfer agents (which may but need not be the same person) to keep the register of transfers, and (subject to section 48 of the Act) may provide for the registration of issues and the registration of transfers of the shares of the Corporation in one or more places and such registrars and/or branch registrars and/or transfer agents and/or branch transfer agents shall keep all necessary books and registers of the Corporation for the registration of the issuance and the registration of transfers of the shares of the Corporation for which they are so appointed. All certificates issued after any such appointment representing shares issued by the Corporation shall be countersigned by or on behalf of one of the said registrars and/or branch registrars and/or transfer agents and/or branch transfer agents, as the case may be.

59. *Replacement of Share Certificates.* The board or any officer or agent designated by the board may in its discretion, or in the discretion of such officer or agent, direct the issuance of a new share certificate in lieu of and upon cancellation of a share certificate that has been mutilated or in substitution for a share certificate claimed to

have been lost, destroyed or wrongfully taken on payment of such fee and on such other terms as to indemnity, reimbursement of expenses and evidence of loss and of title as the board may from time to time prescribe, whether generally or in any particular case.

DIVIDENDS

60. *Declaration and Payment of Dividends.* (1) Subject to the Act and the articles, the directors may from time to time by resolution declare and the Corporation may pay dividends on its issued shares.

(2) Subject to section 41 of the Act, the Corporation may pay a dividend in money or property or by issuing fully paid shares of the Corporation.

61. *Record Date for Dividends and Rights.* The board may fix in advance a date, preceding by not more than 50 days the date for the payment of any dividend or the date for the issue of any warrant or other evidence of the right to subscribe for securities of the Corporation, as a record date for the determination of the persons entitled to receive payment of such dividend or to exercise the right to subscribe for such securities. If no record date is so fixed, the record date for the determination of the persons entitled to receive payment of any dividend or to exercise the right to subscribe for securities of the Corporation shall be at the close of business on the day on which the resolution relating to such dividend or right to subscribe is passed by the board.

62. *Receipt of Dividends by Joint Holders.* In case two or more persons are registered as the joint holders of any securities of the Corporation, any one of such persons may give effectual receipts for all dividends and payments on account of dividends, principal, interest and/or redemption payments on redemption of securities (if any), subject to redemption in respect of such securities

63. *Unclaimed Dividends.* Any dividend unclaimed after a period of six years from the date on which the same has been declared to be payable shall be forfeited and shall revert to the Corporation.

VOTING SECURITIES IN OTHER BODIES CORPORATE

64. All securities of any other body corporate carrying voting rights held from time to time by the Corporation may be voted at all meetings of shareholders, bondholders, debenture holders or holders of such securities, as the case may be, of such other body corporate in such manner and by such person or persons as the directors of the Corporation shall from time to time determine and authorize by resolution. The duly authorized signing officers of the Corporation may also from time to time execute and deliver for and on behalf of the Corporation proxies and/or arrange for the issuance of voting certificates and/or other evidence of the right to vote in such names as they may determine without the necessity of a resolution or other action by the directors.

NOTICE

65. *Method of giving notice.* Any notice, (which term includes, without limitation, any notice of meeting, communication or document) financial statements, or other information or material required or permitted to be given (which term includes, without limitation, sent, delivered or served) pursuant to the Act, the regulations, the Articles, the by-laws or otherwise to a shareholder, director, officer, auditor or member of a committee of the board of directors shall be sufficiently given if delivered personally to the person to whom it is to be given or if mailed to such person at such person's recorded address by prepaid, ordinary or air mail, if sent in electronic form to such person at such person's recorded electronic address, or by a posting on an electronic network together with sending separate notice of such specific posting. A notice so delivered shall be deemed to have been given when it is delivered personally and a notice so mailed shall be deemed to have been given when deposited in a post office or public mailbox. A notice sent in electronic form shall be deemed to have been given when such information, in electronic form, enters an information system outside the control of the Corporation. A notice by posting on an electronic network together with separate notice to the shareholder of such specific posting shall be deemed to have been given upon the later of (i) such posting and (ii) the giving of such separate notice by mail or in electronic form. The secretary may change or cause to be changed the recorded address of any shareholder,

director, officer, auditor or member of a committee of the board of directors in accordance with any information believed by such person to be reliable.

66. *Shares registered in more than one name.* All notices or other documents required to be sent to a shareholder by the Act, the regulations under the Act, the articles or the by-laws of the Corporation shall, with respect to any shares in the capital of the Corporation registered in more than one name, be given to whichever of such persons is named first in the records of the Corporation and any notice or other document so given shall be sufficient notice or delivery of such document to all the holders of such shares.

67. *Persons becoming entitled by operation of law.* Every person who by operation of law, transfer or by any other means whatsoever shall become entitled to any shares in the capital of the Corporation shall be bound by every notice or other document in respect of such shares which prior to the name and address of such person being entered on the records of the Corporation shall have been duly given to the person or persons from whom such person derives the title to such shares.

68. *Deceased Shareholder.* Any notice or other document delivered or sent by post or left at the address of any shareholder as the same appears in the records of the Corporation shall, notwithstanding that such shareholder be then deceased and whether or not the Corporation has notice of such shareholder's decease, be deemed to have been duly served in respect of the shares held by such shareholder (whether held solely or with other persons) until some other person be entered in the shareholder's stead in the records of the Corporation as the holder or one of the holders thereof and such service shall for all purposes be deemed a sufficient service of such notice or other document on the deceased shareholder's heirs, executors or administrators and all persons (if any) interested with the deceased shareholder in such shares.

69. *Signatures to Notices.* The signature of any director or officer of the Corporation to any notice may be written, typewritten, printed or recorded electronically.

70. *Computation of Time.* Where a given number of days' notice or notice extending over any period is required to be given under any provisions of the articles or by-laws of the Corporation, the day of service or posting of the notice shall, unless it is otherwise provided, be counted in such number of days or other period and such notice shall be deemed to have been given or sent on the day of service or posting.

71. *Proof of Service.* A certificate of any officer of the Corporation in office at the time of the making of the certificate or of an officer of any transfer agent, other fulfillment agent or branch transfer agent of shares of any class of the Corporation as to facts in relation to the mailing or delivery or service of any notice or other documents to any shareholder, director, officer or auditor or publication of any notice or other document shall be conclusive evidence thereof and shall be binding on every shareholder, director, officer or auditor of the Corporation, as the case may be.

PAYMENTS

72. All cheques, drafts, orders or directions for the payment of money, all directions or authorizations for electronic payments or transfers and all securities or instruments evidencing obligations of the Corporation shall be signed by such officer or officers or other person or persons, whether or not officers of the Corporation, and in such manner as the directors may from time to time designate by resolution.

CUSTODY OF SECURITIES

73. (1) All securities (including warrants) owned by the Corporation shall be lodged (in the name of the Corporation) with a chartered bank or a trust company or in a safety deposit box or, if so authorized by resolution of the directors, with such other depositories or in such other manner as may be determined from time to time by the directors.

(2) All securities (including warrants) belonging to the Corporation may be issued and held in the name of a nominee or nominees of the Corporation (and if issued or held in the names of more than one nominee shall be held in the names of the nominees jointly with right of survivorship) and shall be endorsed in blank with endorsement guaranteed in order to enable transfer thereof to be completed and registration thereof to be effected.

EXECUTION OF CONTRACTS, ETC.

74. Contracts, documents or instruments in writing requiring the signature of the Corporation may be signed by the chairperson of the board, the chief executive officer, the president, the chief financial officer or a vice-president and the secretary or the treasurer and all contracts, documents and instruments in writing so signed shall be binding upon the Corporation without any further authorization or formality. The board of directors shall have power from time to time by resolution to appoint any officer or officers, or any person or persons, on behalf of the Corporation either to sign contracts, documents and instruments in writing generally or to sign specific contracts, documents or instruments in writing.

The corporate seal of the Corporation, if any, may be affixed to contracts, documents and instruments in writing signed as aforesaid or by any officer or officers, person or persons, appointed as aforesaid by resolution of the board of directors but any such contract, document or instrument is not invalid merely because the corporate seal, if any, is not affixed thereto.

The term "contracts, documents or instruments in writing" as used in this by-law shall include deeds, mortgages, hypothecs, charges, conveyances, transfers and assignments of property real or personal, immovable or movable, agreements, releases, receipts and discharges for the payment of money or other obligations, conveyances, transfers and assignments of shares, share warrants, stocks, bonds, debentures or other securities and all paper writings.

In particular without limiting the generality of the foregoing, the chairperson of the board, the chief executive officer, the president, the chief financial officer or a vice-president and the secretary or the treasurer shall have authority to sell, assign, transfer, exchange, convert or convey any and all shares, stocks, bonds, debentures, rights, warrants or other securities owned by or registered in the name of the Corporation and to sign and execute (under the seal of the Corporation or otherwise) all assignments, transfers, conveyances, powers of attorney and other instruments that may be necessary for the purpose of selling, assigning, transferring, exchanging, converting or conveying any such shares, stocks, bonds, debentures, rights, warrants or other securities.

The signature or signatures of the chairperson of the board, the chief executive officer, the president, a vice-president, the chief financial officer, the secretary, the treasurer, an assistant secretary or an assistant treasurer, or any director of the Corporation and/or of any other officer or officers, person or persons, appointed as aforesaid by resolution of the board of directors, may, if specifically authorized by resolution of the directors, be printed, engraved, lithographed or otherwise mechanically reproduced upon any contracts, documents or instruments in writing or bonds, debentures or other securities of the Corporation executed or issued by or on behalf of the Corporation and all contracts, documents or instruments in writing or bonds, debentures or other securities of the Corporation on which the signature or signatures of any of the foregoing officers or persons authorized as aforesaid shall be so reproduced pursuant to special authorization by resolution of the directors shall be deemed to have been manually signed by such officers or persons whose signature or signatures is or are so reproduced and shall be as valid to all intents and purposes as if they had been signed manually and notwithstanding that the officers or persons whose signature or signatures is or are so reproduced may have ceased to hold office at the date of the delivery or issue of such contracts, documents or instruments in writing or bonds, debentures or other securities of the Corporation.

AUDITOR

75. At each annual meeting of the shareholders of the Corporation, an auditor may be appointed for the purpose of auditing and verifying the accounts of the Corporation for the then current year and the auditor's report shall be submitted at the next annual meeting of the shareholders. The auditor shall not be a director or an officer of the Corporation. Unless fixed by the meeting of shareholders at which the auditor is appointed, the remuneration of the auditor shall be determined from time to time by the directors.

FISCAL YEAR

76. The fiscal period of the Corporation shall terminate on such day in each year as the directors may from time to time by resolution determine.

BORROWING

77. *General Borrowing.* The directors may from time to time:

- (a) borrow money upon the credit of the Corporation;
- (b) issue, reissue, sell or pledge debt obligations of the Corporation;
- (c) give a guarantee on behalf of the Corporation to secure performance of an obligation of any person; and
- (d) mortgage, hypothecate, pledge or otherwise create a security interest in all or any property of the Corporation, owned or subsequently acquired, to secure any obligation of the Corporation.

The directors may from time to time authorize any director or directors, or officer or officers, of the Corporation, to make arrangements with reference to the money borrowed or to be borrowed as aforesaid, and as to the terms and conditions of the loan thereof, and as to the securities to be given therefor, with power to vary or modify such arrangements, terms and conditions and to give such additional securities for any moneys borrowed or remaining due by the Corporation as the directors of the Corporation may authorize, and generally to manage, transact and settle the borrowing of money by the Corporation.

78. *Repeal of By-Laws.* Upon this by-law coming into force, all prior by-laws presently in force other than by-laws relating to the borrowing powers of the Corporation are repealed provided that such repeal shall not affect the previous operation of such by-laws so repealed or affect the validity of any act done or right, privilege, obligation or liability acquired or incurred or the validity of any contract or agreement made pursuant to any such by-laws prior to their repeal. All officers and persons acting under such by-laws so repealed shall continue to act as if appointed under the provisions of this by-law and all resolutions of the shareholders or board passed under such repealed by-laws shall continue to be good and valid except to the extent that they are inconsistent with this by-law or until amended or repealed.

CERTIFIED duly adopted by the Board of Directors
of the Corporation on February 25, 2021.

/s/ Robert J. Buckley

Robert J. Buckley
Chief Financial Officer

NOVANTA INC.
GSI LUMONICS INC.

AMENDED AND RESTATED BY-LAW NUMBER 1

A by-law relating generally to the regulation of the affairs of GSI LUMONICS INC ~~Novanta Inc.~~ BE IT ENACTED AND IT IS HEREBY ENACTED as amended and restated by-law Number 1 of GSI Lumenics ~~Novanta~~ Inc. (hereinafter called the "Corporation") as follows:

DEFINITIONS

1. In this by-law and all other by-laws of the Corporation, unless the context otherwise specifies or requires:

- (a) "Act" means the Business Corporations Act, Statutes of New Brunswick, 1981, c. B-9.1, as from time to time amended, and every statute that may be substituted therefor and, in the case of such amendment or substitution, any reference in the by-laws of the Corporation shall be read as referring to the amended or substituted provisions thereof;
- (b) "articles" means the articles, as from time to time amended, of the Corporation;
- (c) "by-law" means any by-law of the Corporation from time to time in force and effect;
- (d) "director" means an individual occupying the position of director of the Corporation and "directors", "board of directors" and "board" includes a single director;
- (e) ~~"unanimous shareholder agreement" means an agreement as described in subsection 99(2) of the Act or a declaration of a shareholder described in subsection 99(3) of the Act;~~
- (f) words importing the singular number only shall include the plural and vice versa; words importing the masculine gender shall include the feminine and neuter genders and vice versa; words importing persons shall include bodies corporate, corporations, companies, partnerships, syndicates, trusts and any number or aggregate of individuals;
- (g) the headings used in any by-law are inserted for reference purposes only and are not to be considered or taken into account in construing the terms or provisions thereof or to be deemed in any way to clarify, modify or explain the effect of any such terms or provisions; and
- (h) any term contained in any by-law which is defined in the Act shall have the meaning given to such term in the Act.

ELECTRONIC COMMUNICATIONS

2. Electronic Communication. Any notices, financial statements and any other document, information or material, including any proxy, required or permitted by the Act, the by-laws of the Corporation or any other law applicable to the Corporation to be in writing or delivered to a person may be in electronic form and delivered electronically and any such notice, document, information and material shall be deemed delivered to the recipient when such notice, document, information or material, in electronic form, enters an information system outside the control of the Corporation.
3. Electronic Signature. Where any provision of the Act, the by-laws of the Corporation or any other law applicable to the Corporation requires that a document be executed by a shareholder, director, officer or any other person or their authorized representative, such requirement may be satisfied by an electronic signature.

4. ~~Virtual Meetings. Where any provision of the Act, the by-laws of the Corporation or any other law applicable to the Corporation requires or provides for a meeting, such meeting may be convened as a virtual meeting or a hybrid meeting.~~

5. Interpretation. For the purposes of this by-law:

- (a) "electronic form" includes any document that is in digital or optical form;
- (b) "delivered electronically" includes delivery by email or facsimile transmission or by posting on an electronic network that is accessible by recipient and is capable of being retained by the recipient, together with separate notice of such specified posting;
- (c) "electronic signature" means electronic information that a person has created or adopted in order to indicate his or her assent to the document and is attached to or associated with the document and includes, but is not limited to, an electronic representation of the manual signature of the person signing the document.
- (d) "hybrid meeting" means a meeting convened at a specified physical location where persons participating in the meeting may choose to either attend in person or participate through electronic means.
- (e) "participating through electronic means" or words of similar effect means either participation over the internet or using other means of electronic communication, including video or telephone conference, whereby all persons participating can hear each other and, where applicable, can vote.
- (e) "virtual meeting" means a meeting that is not convened at any physical location and all participants participate through electronic means.

REGISTERED OFFICE

~~26.~~ The Corporation may from time to time by resolution of the board of directors change the location of the address of the registered office of the Corporation to another place within New Brunswick.

CORPORATE SEAL

~~37.~~ The Corporation may have one or more corporate seals which shall be such as the board of directors may adopt by resolution from time to time.

DIRECTORS

~~48. Number and Powers.~~ There shall be a board of directors consisting of such fixed number, or minimum and maximum number, of directors as may be set out in the articles or as may be determined as prescribed by the articles, or failing that, as specified by by-law. ~~Subject to any unanimous shareholder agreement, the~~The directors shall manage the business and affairs of the Corporation and may exercise all such powers and do all such acts and things as may be exercised or done by the Corporation and are not by the Act, the articles, the by-laws, any special resolution of the Corporation; ~~any unanimous shareholder agreement~~ or by statute expressly directed or required to be done in some other manner.

~~59.~~ *Vacancies.* If the number of directors is increased, the resulting vacancies shall be filled at a meeting of shareholders duly called for that purpose. Notwithstanding the provisions of paragraph ~~713~~ of this by-law and

subject to the provisions of the Act, if a vacancy should otherwise occur in the board, the remaining directors, if constituting a quorum, may appoint a qualified person to fill the vacancy for the remainder of the term. In the absence of a quorum the remaining directors shall forthwith call a meeting of shareholders to fill the vacancy pursuant to subsection 69(2) of the Act. Where a vacancy or vacancies exist in the board, the remaining directors may exercise all of the powers of the board so long as a quorum remains in office.

610. Duties. Every director and officer of the Corporation in exercising his or her powers and discharging his or her duties shall

- (a) act honestly and in good faith; and
- (b) exercise the care, diligence and skill that a reasonably prudent person would exercise in comparable circumstances, in the best interests of the Corporation.

in the best interests of the Corporation.

711. Qualification. Every director shall be an individual nineteen (19) or more years of age and no one who is of unsound mind and has been so found by a court in Canada or elsewhere or who has the status of a bankrupt or who has been convicted of an offence under the Criminal Code, chapter C-34 of the Revised Statutes of Canada, 1970, as amended from time to time, or the criminal law of any jurisdiction outside of Canada, in connection with the promotion, formation or management of a corporation or involving fraud (unless ~~three (3)~~ five

(5) years have elapsed since the expiration of the period fixed for suspension of the passing of sentence without sentencing or since a fine was imposed, or unless the term of imprisonment and probation imposed, if any, was concluded, whichever is the latest, but the disability imposed hereby ceases upon a pardon being granted) shall be a director.

812. Term of Office. A director's term of office shall be from the meeting at which ~~he~~ the director is elected or appointed (unless the board of directors has specified a later effective date for a director appointed by the board of directors) until the annual meeting next following or until ~~his~~ his successor is elected or appointed, or until, if earlier, ~~he~~ the director dies or resigns, or is removed or disqualified pursuant to the provisions of the Act.

9. 13. Vacation of Office. The office of a director shall ipso facto be vacated if

- (a) ~~he~~ the director dies;
- (b) by notice in writing (which may include an electronic form) to the Corporation ~~he~~ the director resigns ~~his~~ the office and such resignation, if not effective immediately, becomes effective in accordance with its terms;
- (c) ~~he~~ the director is removed from office in accordance with section 67 of the Act; or
- (d) ~~he~~ the director ceases to be qualified to be a director.

1014. Election and Removal. (1) Directors shall be elected by the shareholders by ~~ordinary~~ ordinary resolution ~~in passed by a majority of the votes cast at a general meeting on a show of hands unless a poll is demanded and if a poll is demanded such election, An abstention, vote withheld or broker non-vote shall not be by him~~ passed by a majority of the votes cast at a general meeting on a show of hands unless a poll is demanded and if a poll is demanded such election, An abstention, vote withheld or broker non-vote shall not be by him considered a vote cast. All the directors then in office shall cease to hold office at the close of the meeting of shareholders at which directors are to be elected. A director if qualified, is eligible for re-election.

(2) Subject to sections 65 and 67 of the Act, the shareholders of the Corporation may, by ~~ordinary~~ ordinary resolution ~~at passed by a majority of the votes cast at~~ at passed by a majority of the votes cast at an annual or a special meeting, remove any director before the expiration of ~~his~~ the director's term of office and may, by a majority of the votes cast at the meeting, elect any person ~~in his stead to serve in such director's place~~ in his stead to serve in such director's place for the remainder of ~~his~~ the director's term. An abstention, vote withheld or broker non-vote shall not be considered a vote cast.

(3) Each shareholder entitled to vote at an election of directors has the right to cast a number of votes equal to the number of votes attached to the shares held by ~~him~~ such shareholder multiplied by the number of directors to be elected, and ~~he~~ the shareholder may cast all such votes in favour of one candidate or distribute them among the candidates in any manner.

- (4) A separate vote of shareholders shall be taken with respect to each candidate nominated for director unless a resolution is passed unanimously permitting two (2) or more persons to be elected by a single resolution.
- (5) If a shareholder has voted for more than one candidate without specifying the distribution of ~~his~~the votes among the candidates, ~~he~~the shareholder shall be deemed to have distributed ~~his~~the votes equally among the candidates for whom ~~he~~the shareholder voted.
- (6) If the number of candidates nominated for director exceeds the number of positions to be filled, the candidates who receive the least number of votes shall be eliminated until the number of candidates remaining equals the number of positions to be filled.
- (7) A retiring director shall retain office until the adjournment or termination of the meeting at which ~~his~~such retiring director's successor is elected unless such meeting was called for the purpose of removing ~~him~~the director from office as a director in which case the director so removed shall vacate office forthwith upon the passing of the resolution for ~~his~~ removal.
- ~~++15.~~ *Validity of Acts.* An act by a director or officer is valid notwithstanding an irregularity in ~~his~~the election or appointment ~~of such director or officer~~ or a defect in ~~his~~their qualification.

MEETINGS OF DIRECTORS

~~++16.~~ *Place of Meeting.* Subject to the articles, meetings of directors may be held at any place within or outside New Brunswick as the directors may from time to time determine or as the person convening the meeting may give notice. A meeting of the directors may be convened by the ~~chairman~~chairperson of the board (if any), the ~~chief executive officer (if any), the~~ president ~~(if any)~~ or any director at any time. The secretary ~~(if any)~~ shall upon direction of any of the foregoing officers or director convene a meeting of the directors.

~~++17.~~ *Notice.* (1) Notice of the time and place of each meeting of the board shall be given in the manner provided in ~~Section 6.3~~paragraph 65 to each director:

- (a) not less than three (3) days before the time when the meeting is to be held, if the notice is mailed, or
- (b) not less than twenty-four (24) hours before the time when the meeting is to be held if the notice is given personally or is delivered or is sent by any means of transmitted or recorded communication, such as facsimile transmission, ~~voice-mail~~voicemail or electronic-mail,

provided that meetings of the directors may be held at any time without notice if all the directors have waived notice.

(2) For the first meeting of the board of directors to be held immediately following the election of directors at an annual or special meeting of the shareholders, no notice of such meeting need be given to the newly elected or appointed director or directors in order for the meeting to be duly constituted, provided a quorum of the directors is present.

(3) A notice of a meeting of directors shall specify any matter referred to in subsection 73(2) of the Act that is to be dealt with at the meeting but, unless a by-law otherwise provides, need not otherwise specify the purpose of or the business to be transacted at the meeting.

~~++18.~~ *Waiver of Notice.* Notice of any meeting of the directors or any irregularity in any meeting or in the notice thereof may be waived by any director in writing or ~~by telegram, cable, telex or facsimile transmission~~in electronic form addressed to the Corporation or in any other manner, and such waiver may be validly given either before or after the meeting to which such waiver relates. The attendance of a director at a meeting of directors is a waiver of notice of the meeting except where a director attends a meeting for the express purpose of objecting to the transaction of any business on the grounds that the meeting is not lawfully called.

15. ~~Telephone~~^{19. Virtual Meetings and Electronic Participation.} ~~A director may participate in a meeting~~ Meetings of directors or of a committee of directors ~~by may be convened as virtual meetings or hybrid meetings. Further, any director may participate in any meeting through electronic means of such telephone or, either over the internet or using other means of electronic communication facilities that permit where~~ all persons participating ~~in the meeting to can~~ hear each other, and a director participating in such a meeting by such means shall be deemed to be present at that meeting.

~~1620.~~ ^{Adjournment.} Any meeting of the directors may be adjourned from time to time by the ~~chairman~~^{chairperson} of the meeting, with the consent of the meeting, to a fixed time and place and no notice of the time and place for the continuance of the adjourned meeting need be given to any director if the time and place of the adjourned meeting is announced at the original meeting. Any adjourned meeting shall be duly constituted if held in accordance with the terms of the adjournment and a quorum is present thereat. The directors who formed a quorum at the original meeting are not required to form the quorum at the adjourned meeting. If there is no quorum present at the adjourned meeting, the original meeting shall be deemed to have terminated forthwith after its adjournment.

~~1721.~~ ^{Quorum and Voting.} Subject to the articles, a majority of directors shall constitute a quorum for the transaction of business at any meeting of directors. No business shall be transacted by the directors except at a meeting of directors at which a quorum of the board is present. Questions arising at any meeting of the directors shall be decided by a majority of votes cast. In case of an equality of votes, the ~~chairman~~^{chairperson} of the meeting shall not have a second or casting vote. Where the Corporation has only one director, that director may constitute a meeting.

~~1822.~~ ^{Resolution in lieu of meeting.} A resolution in writing, signed by all the directors ~~(including by electronic signature)~~ or signed counterparts of such resolution by all the directors entitled to vote on that resolution at a meeting of directors or a committee of directors, is as valid as if it had been passed at a meeting of directors or committee of directors duly called, constituted and held. A copy of every such resolution or counterpart thereof shall be kept with the minutes of the proceedings of the directors or such committee of directors.

~~1923.~~ ^{Deemed Consent of Director Present at Meeting.} A director who is present at a meeting of directors or committee of directors is deemed to have consented to any resolution passed or action taken thereat unless ~~he~~^{the director}:

- (a) requests that ~~his~~^{the director's} dissent be or ~~his~~^{the director's} dissent is entered in the minutes of the meeting;
- (b) sends ~~his~~^{the director's} written dissent to the secretary of the meeting before the meeting is terminated; or
- (c) sends ~~his~~^{the director's} dissent by registered mail or delivers to the registered office of the Corporation immediately after the meeting is terminated.

20. ~~Deemed Consent of Director Absent from Meeting. [Deleted]~~

REMUNERATION OF DIRECTORS

~~2124.~~ Subject to the articles ~~or any unanimous shareholder agreement~~, the remuneration to be paid to the directors shall be such as the board of directors shall from time to time determine and such remuneration shall be in addition to the salary paid to any officer of the Corporation who is also a member of the board of directors. The directors may also by resolution award special remuneration to any director undertaking any special services on the Corporation's behalf other than the routine work ordinarily required of a director by the Corporation. The confirmation of any such resolution or resolutions by the shareholders shall not be required. The directors shall also be entitled to be paid their travelling and other expenses properly incurred by them in connection with the affairs of the Corporation.

SUBMISSION OF CONTRACTS OR TRANSACTIONS TO SHAREHOLDERS FOR APPROVAL

~~2225~~. The directors in their discretion may submit any contract, act or transaction for approval, ratification or confirmation at any annual meeting of the shareholders or at any special meeting of the shareholders called for the purpose of considering the same and any contract, act or transaction that shall be approved, ratified or confirmed by resolution passed by a majority of the votes cast at any such meeting (unless any different or additional requirement is imposed by the Act or by the articles or any other by-law) shall be as valid and as binding upon the Corporation and upon all the shareholders as though it had been approved, ratified and/or confirmed by every shareholder of the Corporation.

FOR THE PROTECTION OF DIRECTORS AND OFFICERS

~~2226~~. No director or officer for the time being of the Corporation shall be liable for the acts, receipts, neglects or defaults of any other director or officer or employee of the Corporation or for joining in any receipt or act for conformity or for any loss, damage or expense happening to the Corporation through the insufficiency or deficiency of title to any property acquired by order of the board of directors for or on behalf of the Corporation or for the insufficiency or deficiency of any security in or upon which any of the moneys of or belonging to the Corporation shall be placed out or invested or for any loss or damage arising from the bankruptcy, insolvency or tortious act of any person, firm or corporation including any person, firm or corporation with whom or which any moneys, securities or effects of the Corporation shall be lodged or deposited or for any loss, conversion, misapplication or misappropriation of or any damage resulting from any dealings with any moneys, securities or other assets belonging to the Corporation or for any other loss, damage or misfortune whatever which may happen to the Corporation in the execution of the duties of ~~his~~their respective office of trust or in relation thereto, unless the same shall happen by or through ~~his~~their failure to exercise the powers and to discharge the duties of ~~his~~their office honestly, in good faith with a view to the best interests of the Corporation, and in connection therewith to exercise the care, diligence and skill that a reasonably prudent person would exercise in comparable circumstances, provided that nothing herein contained shall relieve a director or officer from the duty to act in accordance with the Act or regulations made thereunder or relieve ~~him~~the director or officer from liability for a breach thereof. The directors for the time being of the Corporation shall not be under any duty or responsibility in respect of any contract, act or transaction whether or not made, done or entered into in the name or on behalf of the Corporation, except such as shall have been submitted to and authorized or approved by the board of directors. If any director or officer of the Corporation shall be employed by or shall perform services for the Corporation, the fact of ~~his~~the director or officer being a shareholder, director or officer of the Corporation shall not disentitle such director or officer or such firm or body corporate, as the case may be, from receiving proper remuneration for such services.

INDEMNITIES TO DIRECTORS AND OTHERS

~~2427~~. Subject to section 81 of the Act, except in respect of an action by or on behalf of the Corporation or Another Body Corporate (as hereinafter defined) to procure a judgement in its favour, the Corporation shall indemnify each director and officer of the Corporation and each former director and officer of the Corporation and each person who acts or acted at the Corporation's request as a director or officer of Another Body Corporate, and ~~his~~the heirs and legal representatives ~~of such director or officer~~, against all costs, charges and expenses, including any amount paid to settle an action or satisfy a judgment, reasonably incurred ~~by him~~in respect of any civil, criminal or administrative action or proceeding to which ~~he~~such person is made a party by reason of being or having been a director or officer of the Corporation or Another Body Corporate, as the case may be, if

- (a) ~~he~~the person acted honestly and in good faith with a view to the best interests of the Corporation; and
 - (b) in the case of a criminal or administrative action or proceeding that is enforced by a monetary penalty, ~~he~~the person had reasonable grounds for believing that ~~his~~their conduct was lawful.
-

"Another Body Corporate" as used herein means a body corporate of which the Corporation is or was a shareholder or creditor.

~~2528.~~ *Insurance.* Subject to the limitations contained in the Act, the Corporation may purchase and maintain such insurance for the benefit of any person referred to in ~~Section 24~~ paragraph 27 as the board may, from time to time, determine.

OFFICERS

~~2629.~~ *Appointment of Officers.* Subject to the articles ~~or any unanimous shareholder agreement~~, the directors may appoint a ~~chairman~~ chairperson of the board, a chief executive officer, president, ~~chief financial officer~~, and a secretary and, if deemed advisable, may also appoint one or more vice-presidents, ~~chief accounting officer~~, a treasurer and one or more assistant secretaries and/or one or more assistant treasurers. None of such officers, except the ~~chairman~~ chairperson of the board, need be a director of the Corporation. Any two or more of such offices may be held by the same person. In case and whenever the same person holds the offices of secretary and treasurer ~~no, the person~~ may, but need not, be known as the secretary-treasurer. The directors may from time to time designate such other offices and appoint such other officers, employees and agents as it shall deem necessary who shall have such authority and shall perform such functions and duties as may from time to time be prescribed by resolution of the directors.

~~2730.~~ *Remuneration and Removal of Officers.* Subject to the articles ~~or any unanimous shareholder agreement~~, the remuneration of all officers, employees and agents appointed by the directors may be determined from time to time by resolution of the directors. The fact that any officer, employee or agent is a director or shareholder of the Corporation shall not disqualify ~~him~~ such person from receiving such remuneration as may be so determined. The directors may by resolution remove any officer, employee or agent at any time, with or without cause.

~~2831.~~ *Duties of Officers may be Delegated.* In case of the absence or inability or refusal to act of any officer of the Corporation or for any other reason that the directors may deem sufficient, the directors may delegate all or any of the powers of such officer to any other officer or to any director for the time being.

~~29-Chairman~~ *32. Chairperson of the Board.* The ~~chairman~~ chairperson of the board (if any) shall, if present, preside at all meetings of the directors. ~~He~~ The chairperson shall sign such contracts, documents or instruments in writing as ~~require his~~ requiring chairperson's signature and shall have such other powers and duties as may from time to time be assigned to ~~him~~ the chairperson by resolution of the directors.

~~3033.~~ *Chief Executive Officer.* The chief executive officer of the Corporation shall exercise general supervision over the business and affairs of the Corporation and such other duties as the board may specify from time to time. During the absence or disability of the president, or if no president has been appointed, the chief executive officer shall also have the powers and duties of that office. ~~During the absence or disability of the secretary, or if no secretary has been appointed, the chief executive officer shall also have the powers and duties of that office.~~

~~3134.~~ *President.* The president (if any) of the Corporation shall be the chief operating officer and shall, subject to the authority of the Chief Executive Officer, exercise general supervision over the operations of the Corporation. During the absence or disability of the chief executive officer, or if no chief executive officer has been appointed, the president shall also have the powers and duties of that office.

~~3235.~~ *Vice-President.* The vice-president (if any) or, if more than one, the vice-presidents in order of seniority, shall be vested with all the powers and shall perform all the duties of the president in the absence or inability or refusal to act of the president. The vice-president or, if more than one, the vice-presidents in order of seniority, shall sign such contracts, documents or instruments in writing as require ~~his or~~ their signatures and shall also have such other powers and duties as may from time to time be assigned to ~~him or~~ them by resolution of the directors.

36. *Chief Financial Officer.* Subject to the provisions of any resolution of the directors, the chief financial officer shall have the care and custody of all the funds and securities of the Corporation and shall deposit the same in the name of the Corporation in such bank or banks or with such other depository or depositories as the directors may by resolution direct, or shall oversee the treasurer (if any) in the treasurer's performance of such duties. The chief financial officer shall prepare, maintain and keep or cause to be kept adequate books of accounts and accounting records and shall provide such financial information analyses and budgeting and other financial support and forecasting as may be required from time to time by the board of directors or the chief executive officer. The chief financial officer shall sign such contracts, documents or instruments in writing as require the chief financial officer's signature and shall have such other powers and duties as may from time to time be assigned to him by resolution of the directors or as are incident to the office.

37. *Treasurer.*

33 The treasurer (if any) shall under the direction of the chief financial officer administer the funds and securities of the Corporation and shall deposit the same in the name of the Corporation in such bank or banks or with such other depository or depositories as the directors may by resolution direct. The treasurer shall prepare, maintain and keep or cause to be kept adequate books of accounts and accounting records. The treasurer shall sign such contracts, documents or instruments in writing as require the treasurer's signature and shall have such other powers and duties as may from time to time be assigned to him by resolution of the directors or as are incident to the office. The treasurer may be required to give such bond for the faithful performance of the treasurer's duties as the directors in their uncontrolled discretion may require, but no director shall be liable for failure to require any such bond or for the insufficiency of any such bond or for any loss by reason of the failure of the Corporation to receive any indemnity thereby provided.

38. *Secretary.* The secretary (if any) shall give or cause to be given notices for all meetings of the directors or committees thereof (if any) and of shareholders when directed to do so, and shall have charge, subject to the provisions of paragraphs 3437 and 5558 hereof, of the records referred to in section 18 of the Act and of the corporate seal or seals (if any). HeThe secretary shall sign such contracts, documents or instruments in writing as require his signaturerequired and shall have such other powers and duties as may from time to time be assigned to himby resolution of the directors or as are incident to histhe office_of the secretary.

34. 39Treasurer. Subject to the provisions of any resolution of the directors, the treasurer (if any) shall have the care and custody of all the funds and securities of the Corporation and shall deposit the same in the name of the Corporation in such bank or banks or with such other depository or depositories as the directors may by resolution direct. He shall prepare, maintain and keep or cause to be kept adequate books of accounts and accounting records. He shall sign such contracts, documents or instruments in writing as require his signature and shall have such other powers and duties as may from time to time be assigned to him by resolution of the directors or as are incident to his office. He may be required to give such bond for the faithful performance of his duties as the directors in their uncontrolled discretion may require, but no director shall be liable for failure to require any such bond or for the insufficiency of any such bond or for any loss by reason of the failure of the Corporation to receive any indemnity thereby provided.

35. *Assistant Secretary and Assistant Treasurer.* The assistant secretary or, if more than one, the assistant secretaries in order of seniority, and the assistant treasurer or, if more than one, the assistant treasurers in order of seniority (if any), shall respectively perform all the duties of the secretary and treasurer, respectively, in the absence or inability to act of the secretary or treasurer as the case may be. The assistant secretary or assistant secretaries, if more than one, and the assistant treasurer or assistant treasurers, if more than one, shall sign such contracts, documents or instruments in writing as require his or their signaturessignature(s) respectively and shall have such other powers and duties as may from time to time be assigned to them by resolution of the directors.

3640. *Vacancies.* If the office of chairmanchairperson of the board, chief executive officer, president, vice- president, secretary, assistant secretary, treasurer, assistant treasurer, or any other office created by the directors pursuant to paragraph 2629 hereof, shall be or become vacant by reason of death, resignation, removal or in any other manner whatsoever, the directors may, subject to paragraph 2629 hereof, appoint another person to fill such vacancy.

COMMITTEES OF DIRECTORS

~~37~~⁴¹. The directors may from time to time appoint from ~~their number~~^{among themselves} one or more committees of directors consisting of one or more individuals and delegate to such committee or committees any of the powers of the directors except as provided in subsection 73(2) of the Act. Unless otherwise ordered by the directors, a committee of directors shall have power to fix its quorum, elect its ~~chairman~~^{chairperson} and regulate its proceedings. All such committees shall report to the directors as required by them.

SHAREHOLDERS' MEETING

~~38~~⁴². *Annual Meeting.* Subject to compliance with section 85 of the Act, the annual meeting of the shareholders shall be convened on such day in each year and at such time as the directors may by resolution determine ~~or as otherwise specified in the notice of meeting.~~

~~39~~⁴³. *Special Meetings.* (1) Special meetings of the shareholders may be convened by order of the ~~chairman~~^{chairperson} of the board, the ~~chief executive officer or the president~~ ^{or a vice-president (if any)} or by the directors, to be held at such time and place as may be specified in ~~such order~~^{the notice of meeting}.

(2) In accordance with the articles, shareholders holding between them not less than ten percent (10%) of the issued shares of the Corporation that carry the right to vote at a meeting sought to be held may requisition the directors to call a meeting of shareholders. Such requisition shall state the business to be transacted at the meeting and shall be sent to each director and the registered office of the Corporation.

(3) Except as otherwise provided in subsection 96(3) of the Act, it shall be the duty of the directors on receipt of such requisition, to cause such meeting to be called by the secretary of the Corporation.

(4) If the directors do not, within twenty-one (21) days after receiving such requisition call such meeting, any shareholder who signed the requisition may call the meeting.

~~40~~⁴⁴. *Place of Meetings.* Meetings of shareholders of the Corporation ~~shall be held at the registered office of the Corporation~~^{may be conducted as virtual meetings, hybrid meetings or at such other place within New Brunswick fully in-person meetings} as the directors by resolution may determine. ~~Notwithstanding the foregoing, a meeting of shareholders of the Corporation may be held or as otherwise specified in the notice calling the meeting. Except in the case of a virtual meeting, a meeting shall be convened at such place within or outside New Brunswick if all as the directors by resolution may determine or as otherwise specified in the~~ ^{shareholders entitled to vote at that meeting so agree, and a shareholder who attends a meeting of shareholders held outside New Brunswick is deemed to have so agreed except when he attends notice calling the meeting for the express purpose of objecting to the transaction of any business on the grounds that the meeting is not lawfully held. Notwithstanding either of the foregoing sentences, meetings of shareholders may be held outside New Brunswick at one or more places specified in the articles.}

~~41~~⁴⁵. *Notice.* (1) Subject to the articles ~~or a unanimous shareholder agreement, a printed, written or typewritten,~~^a notice stating the day, hour, place ~~of meeting, (if any) of meeting, the method of participating through electronic means (if any),~~ the general nature of the business to be transacted and, if special business is to be transacted thereat, stating

(a) the nature of that business in sufficient detail to permit the shareholder to form a reasoned judgment thereon; and

(b) the text of any special resolution to be submitted to the meeting,

shall be sent to each person who is entitled to notice of such meeting and who on the record date for notice appears on the records of the Corporation or its transfer agent as a shareholder and to each director of the Corporation and the auditor of the Corporation, if any, personally, by sending such notice by prepaid mail, ~~in electronic form, or by a posting on an electronic network together with sending separate notice of such specific posting,~~ or in such other manner as provided by by-law for the giving of notice, not less than twenty-one (21) days

nor more than fifty (50) days before the meeting. ~~If such~~Such notice ~~is sent by mail it~~ shall be addressed to the latest address (including, if applicable, email address or other address for sending in electronic form) of each such person as shown in the records of the Corporation or its transfer agent, or if no address is shown therein, then to the last address of each such person known to the ~~secretary~~Corporation or its transfer agent.

(2) The auditor of the Corporation, if any, is entitled to attend any meeting of shareholders of the Corporation and to receive all notices and other communications relating to any such meeting that a shareholder is entitled to receive.

~~4446.~~ **Waiver of Notice.** A meeting of shareholders may be held for any purpose at any time and, subject to section 84 of the Act, at any place or virtually without notice if all the shareholders entitled to notice of such meeting are either present in person, physically or participating through electronic means, or represented by proxy at the meeting (except where the shareholder attends the meeting for the express purpose of objecting to the transaction of any business on the grounds that the meeting is not lawfully called) or if all the shareholders entitled to notice of such meeting and not present in person nor represented by proxy thereat waive notice of the meeting. Notice of any meeting of shareholders or any irregularity in any such meeting or in the notice thereof may be waived by any shareholder, the duly appointed proxy of any shareholder, any directors or the auditor of the Corporation in writing by telegram, cable, telex or facsimile or electronic form addressed to the Corporation or by any other manner, and any such waiver may be validly given either before or after the meeting to which such waiver relates.

~~4447.~~ **Omission of Notice.** The accidental omission to give notice of any meeting to or the non-receipt of any notice by any person shall not invalidate any resolution passed or any proceeding taken at any meeting of shareholders.

~~4448.~~ **Record Date.** (1) The directors may by resolution fix in advance a date as the record date for the determination of shareholders

- (a) entitled to receive payment of a dividend;
- (b) entitled to participate in a liquidation distribution; or
- (c) for any other purpose except the right to receive notice of or to vote at a meeting of shareholders, but such record date shall not precede by more than fifty (50) days the particular action to be taken.

(2) The directors may by resolution also fix in advance the date as the record date for the determination of shareholders entitled to receive notice of a meeting of shareholders, but such record date shall not precede by more than fifty (50) days or by less than twenty-one (21) days the date on which the meeting is to be held.

- (3) If no record date is fixed,
 - (a) the record date for the determination of shareholders entitled to receive notice of a meeting of shareholders shall be
 - (i) at the close of business on the day immediately preceding the day on which the notice is given; or
 - (ii) if no notice is given, the day on which the meeting is held; and
 - (b) the record date for the determination of shareholders for any purpose, other than that specified in subparagraph (a) above or to vote, shall be at the close of business on the day on which the directors pass the resolution relating thereto.

~~4449.~~ **Voting.** (1) Votes at meetings of the shareholders may be given either personally by electronic means or by proxy. At every meeting at which ~~he~~a shareholder is entitled to vote, every shareholder present in person and every proxyholder shall have one (1) vote ~~on a show of hands. Upon~~unless a poll ~~at~~is conducted in which ~~he is entitled to vote~~case every shareholder present in person or by proxy and entitled to vote shall (subject to the provisions, if any, of the articles) have one (1) vote for every share registered in ~~his~~the shareholder's name.

(2) Voting at a meeting of shareholders shall be ~~by show of hands~~^{conducted in the manner determined by the chairperson of hands the meeting} except where a ballot is demanded by a shareholder or proxyholder entitled to vote at the meeting. A shareholder or proxyholder may demand a ballot either before or after any vote ~~by show of hands~~. In case of an equality of votes the ~~chairman~~^{chairperson} of the meeting shall not have a second or casting vote in addition to the vote or votes to which ~~he~~^{he} the ~~chairperson~~ may be entitled as a shareholder or proxyholder.

(3) At any meeting, unless a ballot is demanded, a declaration by the ~~chairman~~^{chairperson} of the meeting that a resolution has been carried or carried unanimously or by a particular majority or lost or not carried by a particular majority shall be conclusive evidence of the fact without proof of the number or proportion of votes recorded in favour of or against the motion.

(4) In the absence of the ~~chairman~~^{chairperson} of the board, the ~~chief executive officer, the~~ president ~~(if any), the chief financial officer,~~ and every vice-president, the shareholders present entitled to vote shall choose another director as ~~chairman~~^{chairperson} of the meeting and if no director is present or if all the directors present decline to take the chair then the shareholders or proxyholders present shall choose ~~one of their number to be chairman~~^{a person to be chairperson from among the shareholders and proxyholders present}.

(5) If at any meeting a ballot is demanded on the election of a ~~chairman~~^{chairperson} or on the question of adjournment or termination it shall be taken forthwith without adjournment. If a ballot is demanded on any other question or as to the election of directors it shall be taken in such manner and either at once or later at the meeting or at an adjourned meeting as the ~~chairman~~^{chairperson} of the meeting directs. The result of a ballot shall be deemed to be the resolution of the meeting at which the ballot was demanded. A demand for a ballot may be withdrawn.

(6) Where a person holds shares as a personal representative, such person or ~~his~~^{the proxy of such person} is the person entitled to vote at all meetings of shareholders in respect of the shares so held by ~~him~~^{such person}.

(7) Where a person mortgages or hypothecates ~~his~~^{the person's} shares, such person or ~~his~~^{the proxy of such person} is the person entitled to vote at all meetings of shareholders in respect of such shares unless, in the instrument creating the mortgage or hypothec, ~~he~~^{such person} has expressly empowered the person holding the mortgage or hypothec to vote in respect of such shares, in which case, and subject to the articles, such holder or ~~his~~^{the proxy of such holder} is the person entitled to vote in respect of the shares.

(8) Where two or more persons hold the same share or shares jointly, any one of such persons present at a meeting of shareholders has the right, in the absence of the other or others, to vote in respect of such share or shares, but if more than one of such persons are present or represented by proxy and vote, they shall vote together as one on the share or shares jointly held by them.

~~46~~⁵⁰. *Proxies.* (1) A shareholder, including a shareholder that is a body corporate, entitled to vote at a meeting of shareholders may by means of a proxy appoint a proxyholder or one or more alternate proxyholders, none of whom are required to be a shareholder of the Corporation, which proxyholders shall have all the rights of the shareholder to attend and act at the meeting in the place and stead of the shareholder except to the extent limited by the proxy.

(2) An instrument appointing a proxy shall be in writing, ~~which may be in electronic form~~, and shall be executed (~~which may be by electronic signature~~) by the shareholder or by ~~his~~^{the shareholder's} attorney authorized in writing (~~which may be in electronic form~~) or, if the shareholder is a body corporate, either under its seal or by an officer or attorney thereof, duly authorized. A proxy is valid only at the meeting in respect of which it is given or any adjournment thereof.

(3) Unless the Act requires another form, an instrument appointing a proxyholder shall be in the form determined by the directors from time to time.

~~47~~⁵¹. *Time for Deposit of Proxies.* The board may by resolution specify in a notice calling a meeting of shareholders a time, preceding the time of such meeting or an adjournment thereof by not more than 48 hours

excluding Saturdays and holidays before which time proxies to be used at such meeting must be deposited. A proxy shall be acted upon only if, prior to the time so specified, it shall have been deposited with the Corporation or an agent thereof specified in such notice or, if no such time is specified in such notice, only if it has been received by the secretary of the Corporation or by the ~~chairman~~chairperson of the meeting or any adjournment thereof prior to the time of voting.

~~48~~⁵². The directors may from time to time ~~make regulations adopt resolutions~~ regarding the depositing of proxies at some place or places other than the place at which a meeting or adjourned meeting of shareholders is to be held and for particulars of such proxies to be sent by means of wire or wireless or any other form of transmitted or recorded communication or in writing before the meeting or adjourned meeting to the Corporation or any agent of the Corporation for the purpose of receiving such particulars and providing that proxies so deposited may be voted upon as though the proxies themselves were deposited with the Corporation at the meeting or adjourned meeting and votes given in accordance with such regulations shall be valid and shall be counted. The ~~chairman~~chairperson of any meeting of shareholders may, subject to any regulations made as aforesaid, in ~~his~~^{the} chairperson's discretion accept wire or wireless or any other form of transmitted or recorded or written communication as to the authority of any person claiming to vote on behalf of and to represent a shareholder notwithstanding that no proxy conferring such authority has been deposited with the Corporation, and any votes given in accordance with such communication accepted by the ~~chairman~~chairperson of the meeting shall be valid and shall be counted.

~~49~~⁵³. *Adjournment.* (1) The ~~chairman~~chairperson of the meeting may with the consent of the meeting adjourn any meeting of shareholders from time to time to a fixed time and place ~~or no place in the case of a virtual meeting~~. If a meeting of shareholders is adjourned for less than sixty (60) days, it is not necessary to give notice of the adjourned meeting other than by announcement at the earlier meeting that is adjourned. If a meeting of shareholders is adjourned by one or more adjournments for an aggregate of sixty (60) days or more, notice of the adjourned meeting shall be given as for an original meeting.

(2) Any adjourned meeting shall be duly constituted if held in accordance with the terms of the adjournment and a quorum is present at the opening thereof. The persons who formed a quorum at the original meeting are not required to form the quorum at the adjourned meeting. If there is no quorum present at the opening of the adjourned meeting, the original meeting shall be deemed to have terminated forthwith after its adjournment. Any business may be brought before or dealt with at any adjourned meeting which might have been brought before or dealt with at the original meeting in accordance with the notice calling the same.

~~50~~⁵⁴. *Quorum.* ~~All of the shareholders or~~The holders of at least ~~20~~^{33-1/3}% of the shares entitled to vote at the meeting, ~~whichever number be the lesser present~~ personally ~~present~~^(either physically or participating through electronic means) or represented by proxy, shall constitute a quorum of any meeting of shareholders or of any class of shareholders. No business shall be transacted at any meeting unless the requisite quorum be present at the time of the transaction of such business. If a quorum is not present at the time appointed for a meeting of shareholders or within such reasonable time thereafter as the shareholders present may determine, the ~~persons present and entitled to vote~~chairperson of the meeting may adjourn the meeting to a fixed time and place but may not transact any other business and the provisions of paragraph ~~38~~⁴⁵ of this by-law with regard to notice shall apply to such adjournment.

~~51~~⁵⁵. *Resolution in Lieu of meeting.* A resolution in writing signed by all the shareholders or signed counterparts of such resolution by all the shareholders entitled to vote on that resolution at a meeting of shareholders is as valid as if it had been passed at a meeting of the shareholders duly called, constituted and held. A copy of every such resolution or counterpart thereof shall be kept with the minutes of the meetings of shareholders.

~~52. Telephone Participation. [deleted]~~

SHARES AND TRANSFERS

~~§56. Issuance.~~ Subject to the articles, ~~any unanimous shareholder agreement~~ and to section 27 of the Act, shares in the Corporation may be issued at such times and to such persons or classes of persons and, subject to sections 23 and 24 of the Act, for such consideration as the directors may determine.

~~§57. Certificates.~~ Share certificates (and the form of stock transfer power on the reverse side thereof) shall (subject to compliance with section 47 of the Act) be in such form and be signed by such director(s) or officer(s) as the directors may from time to time by resolution determine. Such certificates shall be signed ~~manually~~ by at least one director or officer of the Corporation or by or on behalf of a registrar, transfer agent or branch transfer agent of the Corporation, and any additional signatures required on a share certificate may be printed or otherwise mechanically reproduced thereon. If a share certificate contains a printed or mechanically reproduced signature of a person, the Corporation may issue the share certificate notwithstanding that the person has ceased to be a director or an officer of the Corporation, and the share certificate is as valid as if ~~he~~ the person were a director or an officer at the date of its issue. ~~The Corporation may allow its listed securities to be eligible to be recorded and maintained on the books of its transfer agent without the issuance of a physical stock certificate.~~

~~§58. Registrar and Transfer Agent.~~ The directors may from time to time by resolution appoint or remove one or more registrars and/or branch registrars (which may but need not be the same person) to keep the share register and/or one or more transfer agents and/or branch transfer agents (which may but need not be the same person) to keep the register of transfers, and (subject to section 48 of the Act) may provide for the registration of issues and the registration of transfers of the shares of the Corporation in one or more places and such registrars and/or branch registrars and/or transfer agents and/or branch transfer agents shall keep all necessary books and registers of the Corporation for the registration of the issuance and the registration of transfers of the shares of the Corporation for which they are so appointed. All certificates issued after any such appointment representing shares issued by the Corporation shall be countersigned by or on behalf of one of the said registrars and/or branch registrars and/or transfer agents and/or branch transfer agents, as the case may be.

~~§59. Replacement of Share Certificates.~~ The board or any officer or agent designated by the board may in its ~~or his~~ discretion, or in the discretion of such officer or agent, direct the ~~issue~~issuance of a new share certificate in lieu of and upon cancellation of a share certificate that has been mutilated or in substitution for a share certificate claimed to have been lost, destroyed or wrongfully taken on payment of such fee, ~~not exceeding \$2.00~~, and on such other terms as to indemnity, reimbursement of expenses and evidence of loss and of title as the board may from time to time prescribe, whether generally or in any particular case.

DIVIDENDS

~~57. The~~60. Declaration and Payment of Dividends. (1) ~~Subject to the Act and the articles, the~~ directors may from time to time by resolution declare and the Corporation may pay dividends on ~~the~~its issued ~~and outstanding~~ shares ~~in the~~ capital of .

(2) ~~Subject to section 41 of the Act, the Corporation subject to the Act and to the provisions (if any) of the articles may pay a dividend in money or property or by issuing fully paid shares~~ of the Corporation.

~~58. Dividend Cheques. A dividend payable in cash shall be paid by cheque drawn on the Corporation's bankers or one of them to the order of each registered holder of shares of the class or series in respect of which it has been declared and mailed by prepaid ordinary mail to such registered holder at his recorded address, unless such holder otherwise directs. In the case of joint holders the cheque shall, unless such joint holders otherwise direct, be made payable to the order of all of such joint holders and mailed to them at their recorded address. The mailing of such cheque as aforesaid, unless the same is not paid on due presentation, shall satisfy and discharge the liability for the dividend to the extent of the sum represented thereby plus the amount of any tax which the Corporation is required to and does withhold.~~

~~59. Non-receipt of Cheques. In the event of non-receipt of any dividend cheque by the person to whom it is sent as aforesaid, the Corporation shall issue to such person a replacement cheque for a like amount on such terms as to indemnity, reimbursement or expenses and evidence of non-receipt and of title as the board may from time to time prescribe, whether generally or in any particular case.~~

~~69~~61. *Record Date for Dividends and Rights.* The board may fix in advance a date, preceding by not more than 50 days the date for the payment of any dividend or the date for the issue of any warrant or other evidence of the right to subscribe for securities of the Corporation, as a record date for the determination of the persons entitled to receive payment of such dividend or to exercise the right to subscribe for such securities. If no record date is so fixed, the record date for the determination of the persons entitled to receive payment of any dividend or to exercise the right to subscribe for securities of the Corporation shall be at the close of business on the day on which the resolution relating to such dividend or right to subscribe is passed by the board.

~~64~~62. *Receipt of Dividends by Joint Holders.* In case two or more persons are registered as the joint holders of any securities of the Corporation, any one of such persons may give effectual receipts for all dividends and payments on account of dividends, principal, interest and/or redemption payments on redemption of securities (if any), subject to redemption in respect of such securities

63. *Unclaimed Dividends.* Any dividend unclaimed after a period of six years from the date on which the same has been declared to be payable shall be forfeited and shall revert to the Corporation.

VOTING SECURITIES IN OTHER BODIES CORPORATE

~~62~~64. All securities of any other body corporate carrying voting rights held from time to time by the Corporation may be voted at all meetings of shareholders, bondholders, debenture holders or holders of such securities, as the case may be, of such other body corporate in such manner and by such person or persons as the directors of the Corporation shall from time to time determine and authorize by resolution. The duly authorized signing officers of the Corporation may also from time to time execute and deliver for and on behalf of the Corporation proxies and/or arrange for the issuance of voting certificates and/or other evidence of the right to vote in such names as they may determine without the necessity of a resolution or other action by the directors.

NOTICE

~~63~~65. *Method of giving notice.* Any notice, (which term includes, without limitation, any notice of meeting, communication or ~~other document~~) financial statements, or other information or material required or permitted to be given by the Corporation (which term includes, without limitation, sent, delivered or served) pursuant to the Act, the regulations, the Articles, the by-laws or otherwise to a shareholder, director, officer, or auditor of the Corporation under any provision or member of the Act, the Articles or by law a committee of the board of directors shall be sufficiently given if delivered personally to the person to whom it is to be given or if mailed to such person at such person's recorded address by prepaid, ordinary or air mail, if sent in electronic form to such person at such person's recorded electronic address, or by a posting on an electronic network together with sending separate notice of such specific posting. A notice so delivered shall be deemed to have been given when it is delivered personally and a notice so mailed shall be deemed to have been given when deposited in a post office or public mailbox, delivered to his latest address as shown in the records of the Corporation or if mailed by prepaid ordinary mail or air mail in a sealed envelope addressed to him at his latest address as shown in the records of the Corporation. A notice sent in electronic form shall be deemed to have been given when such information, in electronic form, enters an information system outside the control of the Corporation. A notice by posting on an electronic network together with separate notice to the Corporation or if sent to such person, at shareholder of such specific posting shall be deemed to have been given upon the latest applicable number for later of (i) such person as shown in posting and (ii) the records giving of the Corporation such separate notice by any means of wiremail or wireless or any other in electronic form of transmitted or recorded communication. The secretary may change the or cause to be changed the recorded address on the records of the Corporation of of any shareholder, director, officer, auditor or member of a committee of the board of directors in accordance with any information believed by him such person to be reliable. A notice, communication or document so delivered shall be deemed to have been given when it is delivered personally or at the address aforesaid. A notice, communication or document so mailed shall be deemed to have been given on the day it is deposited in a post office or public letter box. A notice sent by any means of wire or wireless or any other form of transmitted or recorded communication shall be deemed to have been given on the day on which it is transmitted.

~~6466.~~ *Shares registered in more than one name.* All notices or other documents required to be sent to a shareholder by the Act, the regulations under the Act, the articles or the by-laws of the Corporation shall, with respect to any shares in the capital of the Corporation registered in more than one name, be given to whichever of such persons is named first in the records of the Corporation and any notice or other document so given shall be sufficient notice or delivery of such document to all the holders of such shares.

~~6567.~~ *Persons becoming entitled by operation of law.* Every person who by operation of law, transfer or by any other means whatsoever shall become entitled to any shares in the capital of the Corporation shall be bound by every notice or other document in respect of such shares which prior to ~~his~~the name and address ~~of such person~~ being entered on the records of the Corporation shall have been duly given to the person or persons from whom ~~hesuch person~~ derives ~~his~~the title to such shares.

~~6668.~~ *Deceased Shareholder.* Any notice or other document delivered or sent by post or left at the address of any shareholder as the same appears in the records of the Corporation shall, notwithstanding that such shareholder be then deceased and whether or not the Corporation has notice of ~~his~~such shareholder's death, be deemed to have been duly served in respect of the shares held by such shareholder (whether held solely or with other persons) until some other person be entered in ~~his~~the shareholder's stead in the records of the Corporation as the holder or one of the holders thereof and such service shall for all purposes be deemed a sufficient service of such notice or other document on ~~his~~the deceased shareholder's heirs, executors or administrators and all persons (if any) interested with ~~him~~the deceased shareholder in such shares.

~~6769.~~ *Signatures to Notices.* The signature of any director or officer of the Corporation to any notice may be written, ~~stamped,~~ typewritten ~~or,~~ printed or ~~partly written, stamped, typewritten or printed~~ recorded electronically.

~~6870.~~ *Computation of Time.* Where a given number of days' notice or notice extending over any period is required to be given under any provisions of the articles or by-laws of the Corporation, the day of service or posting of the notice shall, unless it is otherwise provided, be counted in such number of days or other period and such notice shall be deemed to have been given or sent on the day of service or posting.

~~6971.~~ *Proof of Service.* A certificate of any officer of the Corporation in office at the time of the making of the certificate or of ~~a transfer~~an officer of any transfer agent, other fulfillment agent or branch transfer agent of shares of any class of the Corporation as to facts in relation to the mailing or delivery or service of any notice or other documents to any shareholder, director, officer or auditor or publication of any notice or other document shall be conclusive evidence thereof and shall be binding on every shareholder, director, officer or auditor of the Corporation, as the case may be.

~~CHEQUES, DRAFTS, NOTES, ETC.~~

~~70~~PAYMENTS

~~72.~~ All cheques, drafts ~~or,~~ orders ~~or directions~~ for the payment of money, ~~all directions or authorizations for electronic payments or transfers~~ and all ~~notes, acceptances and bills~~ securities or instruments evidencing obligations of ~~exchange~~the Corporation shall be signed by such officer or officers or other person or persons, whether or not officers of the Corporation, and in such manner as the directors may from time to time designate by resolution.

CUSTODY OF SECURITIES

~~7173.~~ (1) All securities (including warrants) owned by the Corporation shall be lodged (in the name of the Corporation) with a chartered bank or a trust company or in a safety deposit box or, if so authorized by resolution of the directors, with such other depositaries or in such other manner as may be determined from time to time by the directors.

(2) All securities (including warrants) belonging to the Corporation may be issued and held in the name of a nominee or nominees of the Corporation (and if issued or held in the names of more than one nominee shall be held in the names of the nominees jointly with right of survivorship) and shall be endorsed in blank with endorsement guaranteed in order to enable transfer thereof to be completed and registration thereof to be effected.

EXECUTION OF CONTRACTS, ETC.

~~7274~~ Contracts, documents or instruments in writing requiring the signature of the Corporation may be signed by the ~~chairman~~chairperson of the board, the chief executive officer, the president, the chief financial officer or a vice-president and the secretary or the treasurer and all contracts, documents and instruments in writing so signed shall be binding upon the Corporation without any further authorization or formality. The board of directors shall have power from time to time by resolution to appoint any officer or officers, or any person or persons, on behalf of the Corporation either to sign contracts, documents and instruments in writing generally or to sign specific contracts, documents or instruments in writing.

The corporate seal of the Corporation, if any, may be affixed to contracts, documents and instruments in writing signed as aforesaid or by any officer or officers, person or persons, appointed as aforesaid by resolution of the board of directors but any such contract, document or instrument is not invalid merely because the corporate seal, if any, is not affixed thereto.

The term "contracts, documents or instruments in writing" as used in this by-law shall include deeds, mortgages, hypothecs, charges, conveyances, transfers and assignments of property real or personal, immovable or movable, agreements, releases, receipts and discharges for the payment of money or other obligations, conveyances, transfers and assignments of shares, share warrants, stocks, bonds, debentures or other securities and all paper writings.

In particular without limiting the generality of the foregoing, the ~~chairman~~chairperson of the board, the chief executive officer, the president, the chief financial officer or a vice-president and the secretary or the treasurer shall have authority to sell, assign, transfer, exchange, convert or convey any and all shares, stocks, bonds, debentures, rights, warrants or other securities owned by or registered in the name of the Corporation and to sign and execute (under the seal of the Corporation or otherwise) all assignments, transfers, conveyances, powers of attorney and other instruments that may be necessary for the purpose of selling, assigning, transferring, exchanging, converting or conveying any such shares, stocks, bonds, debentures, rights, warrants or other securities.

The signature or signatures of the ~~chairman~~chairperson of the board, the chief executive officer, the president, a vice-president, the chief financial officer, the secretary, the treasurer, an assistant secretary or an assistant treasurer, or any director of the Corporation and/or of any other officer or officers, person or persons, appointed as aforesaid by resolution of the board of directors, may, if specifically authorized by resolution of the directors, be printed, engraved, lithographed or otherwise mechanically reproduced upon any contracts, documents or instruments in writing or bonds, debentures or other securities of the Corporation executed or issued by or on behalf of the Corporation and all contracts, documents or instruments in writing or bonds, debentures or other securities of the Corporation on which the signature or signatures of any of the foregoing officers or persons authorized as aforesaid shall be so reproduced pursuant to special authorization by resolution of the directors shall be deemed to have been manually signed by such officers or persons whose signature or signatures is or are so reproduced and shall be as valid to all intents and purposes as if they had been signed manually and notwithstanding that the officers or persons whose signature or signatures is or are so reproduced may have ceased to hold office at the date of the delivery or issue of such contracts, documents or instruments in writing or bonds, debentures or other securities of the Corporation.

AUDITOR

~~7475.~~ At each annual meeting of the shareholders of the Corporation, an auditor may be appointed for the purpose of auditing and verifying the accounts of the Corporation for the then current year and ~~his~~the auditor's report shall be submitted at the next annual meeting of the shareholders. The auditor shall not be a director or an officer of the Corporation. Unless fixed by the meeting of shareholders at which ~~he~~the auditor is appointed, the remuneration of the auditor shall be determined from time to time by the directors.

FISCAL YEAR

~~7476.~~ The fiscal period of the Corporation shall terminate on such day in each year as the directors may from time to time by resolution determine.

BORROWING

~~7577.~~ *General Borrowing.* The directors may from time to time:

- (a) borrow money upon the credit of the Corporation;
- (b) issue, reissue, sell or pledge debt obligations of the Corporation;
- (c) give a guarantee on behalf of the Corporation to secure performance of an obligation of any person; and
- (d) mortgage, hypothecate, pledge or otherwise create a security interest in all or any property of the Corporation, owned or subsequently acquired, to secure any obligation of the Corporation.

The directors may from time to time authorize any director or directors, or officer or officers, of the Corporation, to make arrangements with reference to the money borrowed or to be borrowed as aforesaid, and as to the terms and conditions of the loan thereof, and as to the securities to be given therefor, with power to vary or modify such arrangements, terms and conditions and to give such additional securities for any moneys borrowed or remaining due by the Corporation as the directors of the Corporation may authorize, and generally to manage, transact and settle the borrowing of money by the Corporation.

~~7678.~~ *Repeal of By-Laws.* Upon this by-law coming into force, all prior by-laws presently in force other than by-laws relating to the borrowing powers of the Corporation are repealed provided that such repeal shall not affect the previous operation of such by-laws so repealed or affect the validity of any act done or right, privilege, obligation or liability acquired or incurred or the validity of any contract or agreement made pursuant to any such by-laws prior to their repeal. All officers and persons acting under such by-laws so repealed shall continue to act as if appointed under the provisions of this by-law and all resolutions of the shareholders or board passed under such repealed by-laws shall continue to be good and valid except to the extent that they are inconsistent with this by-law or until amended or repealed.

* * * * *

WITNESS CERTIFIED duly adopted by the Board of Directors ~~the corporate seal~~ of the Corporation on ~~this day of~~
February 25, 199-2021.

/s/ Robert J. Buckley
Robert J. Buckley
Chief Financial Officer
~~CHIEF EXECUTIVE OFFICER~~

~~PRESIDENT~~

~~GSI GROUP INC;~~
~~(the "Company") AMENDMENT NUMBER 1 TO BY-LAW NO. 1~~

~~1. Section 50 of By-Law Number 1 of the Company is hereby amended such that the first sentence of Section 50 is hereby amended to read as follows:~~

~~"The holders of at least 33-1/3% of the shares entitled to vote at the meeting, present personally or represented by proxy, shall constitute a quorum of any meeting of shareholders or of any class of shareholders."~~

~~The foregoing amendment to By-Law Number 1 was made by the directors of the Company on April 22, 2005 and was confirmed without variation by the shareholders of the Company on May 26, 2005.~~

~~/s/ Tamlyn Ghanem
Assistant Secretary~~

**GSI GROUP INC;
(the "Company") AMENDMENT NUMBER 2 TO BY-LAW NO. 1**

1. Section 54 of By-Law Number 1 of the Company is hereby amended such that the following sentence shall be added to the end of Section 54:

²¹The Corporation may allow its listed securities to be eligible to be recorded and maintained on the books of its transfer agent without the issuance of a physical stock certificate.²²

2. Section 63 of By-Law Number 1 of the Company is hereby deleted in its entirety and replaced with the following: "Any notice, (which term includes, without limitation, any notice of meeting, communication or document) financial statements, or other information or material required or permitted to be given (Which term includes, without limitation, sent, delivered or served) pursuant to the Act, the regulations, the Articles, the by-laws, any unanimous shareholder agreement or otherwise to a shareholder, director, officer, auditor or member of a committee of the board of directors shall be sufficiently given if delivered personally to the person to whom it is to be given or if mailed to such person at such person's recorded address by prepaid, ordinary or air mail, or if sent to such person at such person's recorded address by means of any telephonic, electronic or other communication facility.

~~A notice so delivered shall be deemed to have been given when it is delivered personally and a notice so mailed shall be deemed to have been given when deposited in a post office or public mailbox.~~ A notice sent by any means of electronic or recorded telephonic communication shall be deemed to have been given when such information, in electronic form, enters an information system outside the control of the Corporation. The secretary may change or cause to be changed the recorded address of any shareholder, director, officer, auditor or member of a committee of the board of directors in accordance with any information believed by such person to be reliable.²³

The foregoing amendment to Section 54 of By-Law Number 1 was made by the directors of the Company on October 23, 2007 and the foregoing amendment to Section 63 of By-Law Number 1 was made by the directors of the Company on February 26, 2008. The amendments to Sections 54 and 63 of By-Law Number 1 were confirmed without variation by the shareholders of the Company on May 15, 2008.

/s/ Daniel J. Lyne
Secretary

NOVANTA INC.

(the "Company") AMENDMENT NUMBER 3 TO BY-LAW NO. 1

1. Section 52 of By-Law Number 1 of the Company is hereby amended and restated as follows:

"52. *Remote Participation*: Meetings of shareholders may be held by means of any telephonic, electronic or other communication facility, including teleconferencing, video conferencing, computer link, webcasting and other similar means, that permits all participants to hear each other during the meeting. Any person entitled to attend a meeting of shareholders may participate in the meeting by means of such a telephonic, electronic or other communication facility, if the Corporation makes available such a facility. A person participating in a meeting by such means shall be deemed to be present at the meeting."

/s/ Robert J. Buckley
Chief Financial Officer

NOVANTA INC. SUBSIDIARIES

Subsidiary	Place of Incorporation
Novanta Corporation	Michigan
Novanta Japan Corporation	Japan
Novanta Singapore Pte. Ltd.	Singapore
Novanta Technologies UK Limited	United Kingdom
Novanta UK Investments Holding Limited	United Kingdom
Novanta Technologies (Suzhou) Co., Ltd.	China
GSI Lumonics Asia Pacific Ltd.	Hong Kong
Novanta Europe GmbH	Germany
Novanta Distribution (USD) GmbH	Germany
Novanta Italy SRL	Italy
NDS Surgical Imaging, LLC	Delaware
Novanta Holdings BV	Netherlands
Novanta EMEA BV	Netherlands
Novanta Česká republika s.r.o.	Czech Republic
Laser Quantum Limited	United Kingdom
Laser Quantum GmbH	Germany
W.O.M. World of Medicine GmbH	Germany
W.O.M. World of Medicine USA, Inc.	Florida
W.O.M. World of Medicine Asia Ltd.	Hong Kong
Zettlex (UK) Limited	United Kingdom
Ingenia-CAT S.L.	Spain
Med X Change Inc.	Florida
Novanta Medical Technologies Corp.	Delaware

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Registration Statements on Form S-3 (Nos. 333-229912) and Forms S-8 (No. 333-171260 and 333-202598) of Novanta Inc. of our report dated March 1, 2021 relating to the financial statements and the effectiveness of internal control over financial reporting, which appears in this Form 10-K.

/s/ PricewaterhouseCoopers LLP

Boston, Massachusetts
March 1, 2021

**CERTIFICATION PURSUANT TO
SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002
CERTIFICATIONS**

I, Matthijs Glastra, certify that:

1. I have reviewed this annual report on Form 10-K of Novanta Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer 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.

March 1, 2021

/s/ Matthijs Glastra
 Matthijs Glastra
 Chief Executive Officer

**CERTIFICATION PURSUANT TO
SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002
CERTIFICATIONS**

I, Robert J. Buckley, certify that:

1. I have reviewed this annual report on Form 10-K of Novanta Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer 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.

March 1, 2021

/s/ Robert J. Buckley
Robert J. Buckley
Chief Financial Officer

**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 Novanta Inc. (the “Company”) on Form 10-K for the period ended December 31, 2020 as filed with the Securities and Exchange Commission on the date hereof (the “Report”), I, Matthijs Glastra, 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 the best of my knowledge:

- (1) the Report fully complies with the requirements of section 13(a) or 15(d), as applicable, 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.

/s/ Matthijs Glastra
Matthijs Glastra
Chief Executive Officer

March 1, 2021

**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 Novanta Inc. (the "Company") on Form 10-K for the period ended December 31, 2020 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Robert J. Buckley, 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 the best of my knowledge:

- (1) the Report fully complies with the requirements of section 13(a) or 15(d), as applicable, 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.

/s/ Robert J. Buckley
Robert J. Buckley
Chief Financial Officer

March 1, 2021