

**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, 2022

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	Trading Symbol(s)	Name of each exchange on which registered
Common shares, no par value	NOVT	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	<input checked="" type="checkbox"/>	Accelerated Filer	<input type="checkbox"/>
Non-accelerated Filer	<input type="checkbox"/>	Smaller reporting company	<input type="checkbox"/>
		Emerging growth company	<input type="checkbox"/>

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

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

If securities are registered pursuant to Section 12(b) of the Act, indicate by check mark whether the financial statements of the registrant included in the filing reflect the correction of an error to previously issued financial statements.

Indicate by check mark whether any of those error corrections are restatements that required a recovery analysis of incentive-based compensation received by any of the registrant's executive officers during the relevant recovery period pursuant to §240.10D-1(b).

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

The aggregate market value of the outstanding common shares held by non-affiliates of the Registrant, based on the closing price of the common shares reported on the Nasdaq Global Select Market on the last business day of the most recently completed second fiscal quarter (July 1, 2022) was \$4,218,704,774. For purposes of this disclosure, common shares held by officers and directors of the Registrant and by persons who held 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 21, 2023, there were 35,741,045 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 10, 2023 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.

Auditor Firm Id:	238	Auditor Name:	PricewaterhouseCoopers LLP	Auditor Location:	Boston, Massachusetts, United States
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NOVANTA INC.
FORM 10-K
YEAR ENDED DECEMBER 31, 2022

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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, Synrad, Laser Quantum, ARGES, WOM, NDS, Med X Change, Reach Technology, JADAK, ThingMagic, Photo Research, General Scanning, ATI Industrial Automation, Celera Motion, IMS, MicroE,

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,” “estimates,” “plans,” “could,” “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 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, including increased interest rates and inflation; 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, social and governance 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 develops and supplies 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, intelligent end-of-arm robotic technology solutions, 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;
- 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, diverse, and motivated employees.

Recent Developments

Acquisition of MPH Medical Devices S.R.O.

On August 11, 2022, the Company acquired 100% of the outstanding shares of MPH Medical Devices S.R.O. ("MPH"), a Czech Republic-based manufacturer of medical consumables with plastics specialization in making disposable tube-set-like products, for a total purchase price of €21.8 million (\$22.4 million), net of cash acquired. The acquisition was financed with borrowings under the Company's revolving credit facility and cash available on hand. The addition of MPH has expanded the Company's manufacturing capacity and capabilities in medical disposable tube set products within the Vision reportable segment.

Business Environment

COVID-19 Pandemic

In response to the COVID-19 pandemic, we took proactive actions and incurred additional costs to protect the health and safety of our employees, including investments in technologies and monitoring equipment, testing employees for COVID-19 at certain locations and rearranging some of our facilities to accommodate social distancing and flexible post-pandemic work environment. These costs were not material in 2022.

Although COVID-19 restrictions have been relaxed in the U.S. and Europe, in response to outbreaks of infection in various locations within China, local governmental authorities continued to implement lockdown orders in some areas during 2022, significantly slowing economic and business activities. Our manufacturing and distribution operations in China have been impacted by these lockdowns.

There continue to be isolated COVID-19 outbreaks in certain regions of the world, but these outbreaks have not had a significant impact on our operations. The extent to which the COVID-19 pandemic will continue to impact our business, operations, financial condition, liquidity and results of operations in 2023 and beyond remains uncertain and unpredictable. For further discussion on the risks and uncertainties associated with the COVID-19 pandemic, refer to *Item 1A. Risk Factors*, herein.

Global Supply Chain Disruptions

Over the past three years, we experienced disruptions to our supply chain as a result of the COVID-19 pandemic and global electronics and other raw material shortages. While we regularly monitor the manufacturing output of companies in our supply chain, disruptions to our suppliers and/or sub-suppliers could further challenge our ability to manufacture our products, adversely affecting our operations and customer relationships. To mitigate the risk of supply interruptions, we are identifying alternative suppliers and distributors, sourcing raw materials from different supplier and distributor locations, modifying our product designs to allow for alternative components to be used without compromising product quality and performance, in-sourcing production of parts where feasible, and taking other actions to ensure a sustainable supply of raw materials. Additionally, restrictions on or disruptions of transportation, such as reduced availability of air transports, port closures and backlogs, and increased border controls or closures, have resulted in higher costs and delays for obtaining raw materials from suppliers. Our supply chain disruptions and customer orders to secure supply have caused significantly elevated customer backlog levels. As of December 31, 2022, our backlog was almost

double our average pre-COVID backlog levels because of longer customer order lead times. We anticipate that our customers will gradually shorten their order lead times as supply chain disruptions ease over time in the near future.

Inflationary Pressures

The COVID-19 pandemic and the global supply chain disruptions have caused inflationary pressures on the market prices for raw materials and components as well as increases in the costs of labor. Price increases were on average more than double the 2021 price increases for certain key raw materials and components. Similarly, the overall low unemployment rate and the competition for available talents resulted in average annual wage increases more than doubling 2021 average annual wage increases. We have generally been able to offset increases in these costs through various productivity and cost reduction initiatives, as well as increasing our selling prices to pass through some of these higher costs to our customers. However, our ability to raise our selling prices depends on market conditions and competitive dynamics. Given the timing of our actions compared to the timing of these inflationary pressures, there may be periods during which we are unable to fully recover the increases in our costs. Additionally, the inflationary pressures have given rise to significant increases in interest rates as various governments used monetary policy to reduce inflation. As a result, our weighted average interest rate increased from approximately 2.3% as of December 31, 2021 to approximately 5.1% as of December 31, 2022.

Russia Ukraine Conflict

In February 2022, Russian forces invaded Ukraine. In response, the U.S., the European Union (“EU”), and several other countries imposed economic and trade sanctions and other restrictions (collectively, “global sanctions”) targeting Russia and Belarus. Russia then imposed retaliatory economic measures against the U.S., the EU, and several other countries. Our sales to Russia have not been material. We also do not have any assets, employees or third-party contractors in Russia or Ukraine. The duration of the conflict and further sanctions could have further impact on the global economy and inflation. Due to the uncertainty around the duration of the conflict, these longer-term factors are unknown to our business.

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 millions)
MPH Medical Devices S.R.O.	2022	\$ 22.6
ATI Industrial Automation, Inc.	2021	\$ 223.9
Schneider Electric Motion USA, Inc.	2021	\$ 118.6
ARGES GmbH	2019	\$ 73.2
Zettlex Holdings Limited	2018	\$ 32.0
Laser Quantum Limited (24%) ⁽¹⁾	2018	\$ 45.1
Laser Quantum Limited (35%)	2017	\$ 31.1
W.O.M. World of Medicine GmbH	2017	\$ 134.9
JADAK LLC	2014	\$ 94.8
NDS Surgical Imaging LLC	2013	\$ 75.4

⁽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, 2022 (dollars in millions):

	Revenue	Gross Profit Margin	Operating Profit
Photonics	\$ 274.7	47.0%	\$ 63.8
Vision	\$ 278.0	39.1%	\$ 28.2
Precision Motion	\$ 308.2	47.4%	\$ 60.3

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, particularly ophthalmology applications. 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 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 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, micromachining 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 technologies, video recorders, 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	High definition, 4K and 4K 3D visualization solutions for minimally invasive surgery and robotic surgery.
<i>Video Processing, Streaming and Capture</i>	Medical	NDS, 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 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	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>	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 motors, servo drives and motion control solutions, integrated stepper motors, intelligent robotic end-of-arm technology solutions, 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 seven 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, IMS	Direct drive motor components and integrated motion sub-assemblies 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 equipment.
<i>Integrated Stepper Motors</i>	Advanced Industrial and Medical	IMS	Integrated motion control solutions and electronic controls for automation equipment, agricultural robotics, industrial robotics, medical and life science applications.
<i>Intelligent robotic end-of-arm technology solutions</i>	Advanced Industrial and Medical	ATI	Robotic accessories and end-of-arm tooling, including tool changers, multi-axis force torque sensors, utility couplers, material removal tools, collision sensors, and compliance devices. Applications include advanced industrial and medical robotics.
<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, 2022, the medical market accounted for approximately 49% 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.

Advanced Industrial Market

For the year ended December 31, 2022, the advanced industrial market accounted for approximately 51% 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 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.

Customers

We have a diverse group of customers that includes companies that are global leaders in the medical and advanced industrial markets. Many of our customers participate in several market industries. No customer accounted for greater than 10% of our consolidated revenue during the years ended December 31, 2022 and December 31, 2021. 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.

Our customers include many OEMs who integrate our products into their systems for sale to end users. 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 several 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 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, 2022 and 2021, our consolidated backlog was approximately \$611.6 million and \$568.8 million, respectively. Most 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. The ability to reschedule orders included in backlog varies depending on the customer and order. Management believes that backlog typically is not a complete indicator of future business prospects for any of our business segments due to the ability of customers to reschedule orders based on their updated demand and timing requirements, the potential fluctuations in our supply chain and manufacturing capacity. Therefore, backlog as of any date should not be relied upon as a complete indicator of our revenues for any future period. During 2022, we continued to experience longer than normal lead times for our customer orders, caused by higher customer demand and unprecedented raw materials shortages and supply chain disruptions caused by both the COVID-19 pandemic and other economic and geopolitical factors.

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; Taunton and Manchester, United Kingdom; and Suzhou, China. Products offered by our Vision segment are manufactured at facilities in Syracuse, New York; Mukilteo, Washington; Přelouč, Czech Republic; and Ludwigsstadt, Germany. Products offered by our Precision Motion segment are manufactured at facilities in Bedford, Massachusetts; Apex, North Carolina; Marlborough, Connecticut; Rocklin, California; and Suzhou, China.

The majority of our products are produced in manufacturing facilities certified under ISO 9001 certification, while most of our products manufactured for the medical market are produced in factories under ISO 13485 certification. The majority of our manufacturing facilities are also ISO 14001 certified. Certain visualization solutions, thermal chart recorders, imaging informatics, and medical insufflators, pumps, disposables, 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. We also use 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

We encounter aggressive and strong competition in virtually all the markets, applications, and technologies we serve. Due to the wide and diverse range of products and technologies, we face many different types of competitors and competition. 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 organizations producing a limited number of highly specialized products or services for specialized applications. The competitive climate of many of the end market applications we serve are characterized by rapidly evolving technology and customer demands that require continuing investments by us. Our competitive success requires advances in technology and product performance, improved price-for-performance ratios, demonstrated increased throughput performance for our customers’ products, lower total cost of ownership, product quality, depth of our application knowledge and expertise, reputation amongst customers, customer service and technical support, speed to market, geographical presence, and deep customer relationships.

We believe that our products offer several competitive advantages for our customers, and the breadth of the technologies we offer gives us deep applications knowledge to better serve our customers’ needs.

Raw Materials, Components and Supplies

Each of our businesses uses a wide variety of raw materials, 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 are able to design and/or re-engineer the parts and components used in our products in case of supply chain shortages. For certain raw materials, 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 several 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 (“DEI”) initiatives. The Chief Executive Officer (“CEO”) and the CHRO regularly update our board of directors on the operation and status of these human capital activities, including, but not limited to, talent management, talent development, and succession planning. As of December 31, 2022, we employed approximately 3,000 people, of which approximately 44% were in the United States, 46% in Europe, and 10% in Asia. We win with our customers by delivering new technology innovations through our engineering teams of approximately 600 employees.

We believe that our employees have a meaningful role in helping us develop our culture. We utilize survey feedback mechanisms to measure employee engagement and organizational health. This enables us to gain insight into our current status and into areas where we can improve. We have conducted surveys of our entire employee population in each of last four years and we compare our employee engagement and organizational health scores against benchmark populations with our survey vendors. Our employee satisfaction score in 2022 was 90% of the benchmark score. This is an improvement of 3 percentage points compared with 2021. Following each survey cycle, we review the results with our teams across the company and develop specific action plans based on the feedback we receive. We execute on our action plans with the goal of improving our overall organizational 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, suppliers or customers. We provide training and education to our global workforce with respect to our Code of Ethics and Business Conduct, anti-corruption and anti-bribery policies, data privacy regulations and workplace harassment on an annual basis.

Diversity and Inclusion

The Novanta Way defines our performance culture and begins with building cohesive teams based on trust, commitment, and accountability. Diversity, equity, and inclusion are an important part of our culture and will be leader led and embedded into our ways of working. Our aim is to reflect diversity in our governance, leadership, influence, and technical expertise at all levels in the organization. Our policy is to not tolerate discrimination and harassment. We expect our teams to respect our core values and conduct themselves ethically at all times in accordance with the Novanta Code of Ethics and Business Conduct.

As of December 31, 2022, our board of directors was 50% comprised of men and 50% comprised of women. Women representation on our board of directors increased 17 percentage points in 2022 from 2021. Individuals from underrepresented groups (defined as individuals who self-identify as Black, African American, Hispanic or Latino, Asian, Native American, Alaskan Native, Native Hawaiian or Pacific Islander, or two or more races or ethnicities) remained at 11% representation of our board of directors as of December 31, 2022.

As of December 31, 2022, our gender diversification efforts resulted in 40% of our workforce being women, which was an increase of 4 percentage points in women representation on our workforce from December 31, 2021. The proportion of women in management positions amounted to 25%, which is consistent with the prior year. Employees from underrepresented groups represented 45% of our U.S. based workforce as of December 31, 2022, an increase of 3 percentage points compared to 2021.

During 2022, our DEI roadmap included a series of strategic initiatives designed to help further diversify our workforce, by connecting with women and underrepresented candidate populations and measuring our recruiting activities to ensure that women and underrepresented candidates are present in our final interview slates by more than 55%, while fostering an inclusive culture and promoting lifelong learning as a part of our work towards cultural transformation. As a result of these initiatives, we increased our representation of women within the Company. We also increased the proportion of employees from underrepresented groups across our U.S. workforce, both among individual employees and in leadership positions.

Our Culture Council launched one more Employee Resource Group (“ERG”) with the goal of increasing employees’ sense of inclusion and belonging. We now have three employee-led ERGs:

- Multicultural & International ERG

- Women's ERG
- Novanta Professionals Network ERG

Additionally, our Localization and Development team collaborated with our business units on NovantaCARES, our voluntary community outreach program to promote greater equity within marginalized and underserved communities and to protect the environment. Our Learning and Development team facilitated live peer-to-peer DEI educational programs to promote greater understanding of the benefits of diversity and inclusion.

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 other insurance benefits, flexible spending accounts, health savings account with company matching contributions, 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. Additionally, all U.S. employees and their families have access to video and telephonic Telemedicine support seven days a week, twenty-four hours a day. Our bonus and commission payment programs allow for higher payouts when goals are exceeded and lower payouts when goals are not achieved as planned.

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 that includes both internal and external training courses. We leverage the Novanta University processes and learning content to ensure all new employees have a common and complete onboarding experience. Our people leaders, with the support of our human resources organization, are accountable for ensuring the onboarding process is complete and effective. In addition to Novanta University, we utilize our Novanta Growth System, which provides processes, tools, and trainings with a focus on continuous improvement. In 2022, further investment was made in leadership development and diversity, equity, and inclusion. Approximately 90% of our top leaders successfully completed our global coaching and leadership development program which included the completion of Individual Development Plans ("IDPs"). Additionally, we launched Leadership Development for Front-Line Leaders, a leadership development program targeting front-line and mid-level leaders. We also hosted numerous DEI educational events throughout the year. This included providing Unconscious Bias voluntary training to over 80% of our professional employees, Inclusive Leadership Masterclasses for our people leaders, and Culture Mapping training for all of our employees around the globe.

NovantaCARES - Voluntary Community Support

We provide every employee with one paid day-off per year to volunteer at non-profit organizations supporting social charities or the environment. We had set a Novanta-wide goal of sponsoring 250 community service days by the end of 2022. For the year ended December 31, 2022, we surpassed the goal with 314 community service days.

Safety and Wellbeing of Our Employees

We provide mandatory safety trainings in our 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 further support of our employees, we maintained and promoted our global health and wellness resource center, "NovantaWELL". The resource center provides a central information hub for all employees, with country-specific information, on physical and mental health and wellness.

Cybersecurity

In the normal course of business, we may collect and store confidential and other sensitive information, including proprietary and confidential business information, trade secrets, intellectual property, sensitive third-party information, and employee information. To protect this information, we have developed and implemented continuous monitoring and detection programs, multi-layer defense architecture, encryption of critical data, and comprehensive security assessments protocols. Our cybersecurity program enables us to assess and mitigate cybersecurity risks (threats, vulnerabilities, and impacts) with customized measures and controls to protect and preserve the confidentiality, integrity and availability of our data and systems. We have established policies and procedures leveraging widely accepted industry standard cyber security frameworks like National Institute of Standards and Technology (NIST) to safeguard against cyber-attacks. Furthermore, we perform penetration testing and engage third parties to assess the effectiveness of our security

program. Additionally, we perform organization-wide cybersecurity awareness training multiple times a year and have established a multi-layer recovery plan of our information technology ecosystem to protect against business interruption. Our dedicated team of cybersecurity professionals utilize a variety of cyber protection tools and methods to monitor and enforce our cybersecurity controls and procedures. We also monitor current developments in the cybersecurity industry and adopt new tools and technologies deemed suitable to our environment in order to continuously enhance our cybersecurity profile. However, despite all of our efforts to strengthen our cybersecurity program, there is no guarantee that a significant cyber-attack will not occur in the future. We maintain cybersecurity insurance coverage related to cyber-attacks and other information security breaches; however, such insurance coverage may be unavailable or insufficient to cover all losses or all types of claims that may arise in the continually evolving area of cybersecurity risks.

The Company's Audit Committee and Environment, Social and Governance (ESG) Committee of the Board of Directors are jointly responsible for the oversight of cybersecurity risks. The Audit Committee reviews quarterly with management the Company's cybersecurity program and related matters.

We have experienced cybersecurity incidents in the past; however, to date, these incidents have not represented a material breach, nor have they had a material impact on our operations or financial results. Future cybersecurity incidents could have a material adverse effect on our business, reputation, financial condition, or operating results. Expenses incurred in connection with information security incidents have been immaterial for the years ended December 31, 2022, 2021, and 2020, respectively.

Government Regulation

Our current and contemplated activities and the products and processes that will result from such activities are subject to substantial government rules and 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 discharge 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") and foreign regulatory authorities. 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, local and foreign authorities as well as notified bodies. In the United States, 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 medical devices.

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, provide 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.

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.

Regulation of Medical Devices in the European Union and U.K.

The EU has adopted specific directives and regulations regulating the design, manufacture, clinical investigation, conformity assessment, labeling and adverse event reporting for medical devices.

Until May 25, 2021, medical devices were regulated by the Council Directive 93/42/EEC ("EU Medical Devices Directive") which has been repealed and replaced by Regulation (EU) No 2017/745 ("EU Medical Devices Regulation"). Our current certificates have been granted and renewed under the EU Medical Devices Directive. Pursuing marketing of medical devices in the EU will notably require that our devices be certified under the new regime set forth in the EU Medical Devices Regulation when our current certificates expire. According to the EU Medical Devices Regulation, several transitional provisions are in place (Article 120) to avoid market disruption and allow a smooth transition from the EU Medical Devices Directive to the EU Medical Devices Regulation. Some device certificates issued under the EU Medical Devices Directive ("MDD certificates") may remain valid until May 26, 2024, and some devices with MDD certificates may generally continue to be made available on the market or put into service until May 26, 2025, provided that the requirements of the transitional provisions are fulfilled. In particular, the certificate in question must still be valid and no significant change must be made to the device in question. However, as of May 26, 2021, some of the EU Medical Devices Regulation requirements apply in place of the corresponding requirements of the EU Medical Devices Directive with regard to registration of economic operators and of devices, post-market surveillance, market surveillance and vigilance requirements. During the transition phase, products certified under the EU Medical Devices Directive and products certified under the EU Medical Devices Regulation will

coexist on the market. Both will have equal status under the law, and no discrimination on eligibility criteria in public tenders may take place.

EU Medical Devices Directive

Under the EU Medical Devices Directive, all medical devices placed on the market in the EU must meet the relevant essential requirements in the EU Medical Devices Directive, including the requirement that a medical device must be designed and manufactured in such a way that it will not compromise the clinical condition or safety of patients, or the safety and health of users and others. In addition, the device must achieve the performance intended by the manufacturer and be designed, manufactured, and packaged in a suitable manner. The European Commission has adopted various standards applicable to medical devices. These include standards governing common requirements, such as sterilization and safety of medical electrical equipment and product standards for certain types of medical devices. There are also harmonized standards relating to design and manufacture. While not mandatory, compliance with these standards is viewed as the easiest way to satisfy the essential requirements as a practical matter as it creates a rebuttable presumption that the device satisfies that essential requirement.

To demonstrate compliance with the requirements in the EU Medical Devices Directive, medical device manufacturers must undergo a conformity assessment procedure, which varies according to the type of medical device and its risk classification. As a general rule, demonstration of conformity of medical devices and their manufacturers with the essential requirements must be based, among other things, on the evaluation of clinical data supporting the safety and performance of the products during normal conditions of use. Specifically, a manufacturer must demonstrate that the device achieves its intended performance during normal conditions of use, that the known and foreseeable risks and any adverse events are minimized and acceptable when weighed against the benefits of its intended performance, and that any claims made about the performance and safety of the device are supported by suitable evidence. Except for low-risk medical devices (Class I non-sterile, non-measuring devices), where the manufacturer can self-declare the conformity of its products with the essential requirements (except for any parts which relate to sterility or metrology), a conformity assessment procedure requires the intervention of a notified body. Notified bodies are independent organizations designated by EU member states to assess the conformity of devices before being placed on the market. A notified body would typically audit and examine a product's technical dossiers and the manufacturer's quality system under the relevant harmonized standards, such as ISO 13485:2016 for Medical Devices Quality Management Systems. If satisfied that a relevant product conforms to the relevant essential requirements, a notified body issues a certificate of conformity, which the manufacturer uses as a basis for its own declaration of conformity. The manufacturer may then apply the European Conformity ("CE") mark to the device, which allows the device to be placed on the market throughout the EU.

Throughout the term of the certificate of conformity, the manufacturer will be subject to periodic surveillance audits to verify continued compliance with the applicable requirements. In particular, there will be a new audit by the notified body before it will renew the relevant certificate(s).

EU Medical Devices Regulation

The recently effective EU Medical Devices Regulation establishes a uniform regulatory framework across the EU for medical devices. Unlike the EU Medical Devices Directive, the EU Medical Devices Regulation is directly applicable in EU member states without the need for member states to implement it into national law. The new EU Medical Devices Regulation, among other things, strengthens the rules on placing devices on the market, reinforces surveillance once they are available and, establishes explicit provisions on manufacturers' responsibilities for the follow-up of the quality, performance and safety of devices placed on the market.

The EU Medical Devices Regulation became effective on May 26, 2021. Devices lawfully placed on the market pursuant to the EU Medical Devices Directive prior to May 26, 2021 may generally continue to be made available on the market or put into service until May 26, 2025, provided that the requirements of the transitional provisions are fulfilled. In particular, the certificate in question must still be valid and no substantial change must be made to the device as such a modification would trigger the obligation to obtain a new certification under the EU Medical Devices Regulation and therefore to have a notified body conducting a new conformity assessment of the devices. However, even in this case, manufacturers must comply with a number of new or reinforced requirements set forth in the EU Medical Devices Regulation, including the obligations described below.

The EU Medical Devices Regulation requires that before placing a device, other than a custom-made device, on the market, manufacturers (as well as other economic operators such as authorized representatives and importers) must register by submitting identification information to the electronic system (Eudamed), unless they have already registered. The information to be submitted by manufacturers (and authorized representatives) also includes the name, address and contact details of the person or persons responsible for regulatory compliance. The new Regulation also requires that before placing a device, other than a custom-made device, on the market, manufacturers must assign a unique identifier to the device and provide it along with other core data to the unique device identifier ("UDI") database. These new requirements aim at ensuring better identification and traceability of the devices. Each device

– and as applicable, each package – will have a UDI composed of two parts: a device identifier (“UDI-DI”), specific to a device, and a production identifier (“UDI-PI”) to identify the unit producing the device. Manufacturers are also notably responsible for entering the necessary data on Eudamed, which includes the UDI database, and for keeping it up to date. The obligations for registration in Eudamed will become applicable at a later date (as Eudamed is not yet fully functional). Until Eudamed is fully functional, the corresponding provisions of the EU Medical Devices Directive continue to apply for the purpose of meeting the obligations laid down in the provisions regarding exchange of information, including, and in particular, information regarding registration of devices and economic operators.

All manufacturers placing medical devices into the market in the EU must comply with the EU medical device vigilance system. Under this system, serious incidents and Field Safety Corrective Actions (“FSCAs”) required to be taken by manufacturers must be reported to the relevant authorities of the EU member states. These reports will have to be submitted through Eudamed – once functional – and aim to ensure that, in addition to reporting to the relevant authorities of the EU member states, other actors such as the economic operators in the supply chain will also be informed. Until Eudamed is fully functional, the corresponding provisions of the EU Medical Devices Directive continue to apply. Manufacturers are required to take FSCAs, which are defined as any corrective action for technical or medical reasons to prevent or reduce a risk of a serious incident associated with the use of a medical device that is made available on the market. A serious incident is any malfunction or deterioration in the characteristics or performance of a device on the market (e.g., inadequacy in the information supplied by the manufacturer, undesirable side-effect), which, directly or indirectly, might lead to either the death or serious deterioration of the health of a patient, user, or other persons, or to a serious public health threat. An FSCA may include the recall, modification, exchange, destruction or retrofitting of the device. FSCAs must be communicated by the manufacturer or its legal representative to its customers and/or to the end users of the device through Field Safety Notices. For similar serious incidents that occur with the same device or device type and for which the root cause has been identified or a FSCA implemented or where the incidents are common and well documented, manufacturers may provide periodic summary reports instead of individual serious incident reports.

The advertising and promotion of medical devices is subject to some general principles set forth in EU legislation. According to the EU Medical Devices Regulation, only devices that are CE marked may be marketed and advertised in the EU in accordance with their intended purpose. Directive 2006/114/EC concerning misleading and comparative advertising and Directive 2005/29/EC on unfair commercial practices, while not specific to the advertising of medical devices, also apply to the advertising thereof and contain general rules, for example, requiring that advertisements are evidenced, balanced and not misleading. Specific requirements are defined at a national level. EU member states’ laws related to the advertising and promotion of medical devices, which vary between jurisdictions, may limit or restrict the advertising and promotion of products to the general public and may impose limitations on promotional activities with healthcare professionals.

Many EU member states have adopted specific anti-gift statutes that further limit commercial practices for medical devices, in particular vis-à-vis healthcare professionals and organizations. Additionally, there has been a recent trend of increased regulation of payments and transfers of value provided to healthcare professionals or entities and many EU member states have adopted national “Sunshine Acts” which impose reporting and transparency requirements (often on an annual basis), similar to the requirements in the United States, on medical device manufacturers. Certain countries also mandate implementation of commercial compliance programs.

In the EU, regulatory authorities have the power to carry out announced and, if necessary, unannounced inspections of companies, as well as suppliers and/or sub-contractors and, where necessary, the facilities of professional users. Failure to comply with regulatory requirements (as applicable) could require time and resources to respond to the regulatory authorities’ observations and to implement corrective and preventive actions, as appropriate. Regulatory authorities have broad compliance and enforcement powers and if such issues cannot be resolved to their satisfaction can take a variety of actions, including untitled or warning letters, fines, consent decrees, injunctions, or civil or criminal penalties.

The aforementioned EU rules are generally applicable in the European Economic Area (“EEA”), which consists of the 27 EU member states plus Norway, Liechtenstein and Iceland.

United Kingdom

Since January 1, 2021, the Medicines and Healthcare Products Regulatory Agency (“MHRA”) has been the sovereign regulatory authority responsible for the medical device market in Great Britain (i.e. England, Wales and Scotland). The regulations on medical devices in Great Britain continue to be based largely on the two EU Directives (the EU Medical Devices Directive and Directive 90/385/EEC, or “EU Active Implantable Medical Devices Directive”) which preceded the EU Medical Devices Regulation, as implemented into national law by the Medical Devices Regulations 2002 (“SI 2002 No 618”, as amended). However, under the terms of the Protocol on Ireland/Northern Ireland, the EU Medical Devices Regulation applies to Northern Ireland.

On June 26, 2022, the MHRA published its response to a 10-week consultation on the post-Brexit regulatory framework for medical devices and diagnostics. The MHRA seeks to amend the Medical Devices Regulations 2002, in particular to create a new

access pathway to support innovation, create an innovative framework for regulating software and artificial intelligence as medical devices, reform in-vitro diagnostic medical device regulation and foster sustainability through the reuse and remanufacture of medical devices. Regulations implementing the new regime were originally scheduled to come into force in July 2023, but the Government has recently confirmed that this date is likely to be postponed until July 2024. Devices which have valid CE certification issued by EU notified bodies under the EU Medical Devices Regulation or EU Medical Devices Directive are subject to transitional arrangements. In its consultation response, the MHRA indicated that the future UK regulations will allow devices certified under the EU Medical Devices Regulation to be placed on the market in Great Britain under the CE mark until either the certificate expires or for five years after the new regulations take effect, whichever is sooner. Devices certified under the EU Medical Devices Directive could continue to be placed on the market until either the certificate expires or for three years after the new regulations take effect, whichever is sooner. Following these transitional periods, it is expected that all medical devices will require a UK Conformity Assessment (“UKCA”) mark. Manufacturers may choose to use the UKCA mark on a voluntary basis prior to the regulations coming into force. However, from July 2024, products which do not have existing and valid certification under the EU Medical Devices Directive or EU Medical Devices Regulation and are therefore not subject to the transitional arrangements will be required to carry the UKCA mark if they are to be sold into the market in Great Britain. UKCA marking will not be recognized in the EU. The rules for placing medical devices on the market in Northern Ireland, which is part of the U.K., differ from those in Great Britain (England, Scotland and Wales) and continues to be based on EU law.

For further information regarding EU and U.K. healthcare laws and regulations that our operations are subject to, see “Item 1A. Risk Factors—Risks Relating to Our Business— We are subject to extensive and dynamic medical device regulations, which may impede or hinder the approval, certification or sale of our products and, in some cases, may ultimately result in an inability to obtain approval or certification of certain products or may result in the recall or seizure of previously approved or certified products.”

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. Such laws include, without limitation, U.S. federal and state anti-kickback, fraud and abuse, false claims, pricing reporting, and physician payment transparency laws and regulations regarding drug pricing and payments or other transfers of value made to physicians and other licensed healthcare professionals as well as similar foreign laws in the jurisdictions outside the United States. 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.

Data Privacy and Security Laws and Regulations

Numerous state, federal and foreign laws govern the collection, dissemination, use, access to, confidentiality, and security of personal information, including health-related information. In the United States, numerous federal and state laws and regulations, including data breach notification laws, health information privacy and security laws that govern the collection, use, disclosure, and protection of health-related and other personal information, including HIPAA, could apply to our operations or the operations of our customers. In addition, certain state and non-U.S. laws, such as the California Consumer Privacy Act (“CCPA”), the California Privacy Rights Act (“CPRA”), and the General Data Protection Regulation (“GDPR”), govern the privacy and security of personal information, including health-related information in certain circumstances, some of which are more stringent than HIPAA and many of which differ from each other in significant ways and may not have the same effect, thus complicating compliance efforts. Failure to comply with these laws, where applicable, can result in the imposition of significant civil and/or criminal penalties and private litigation. Privacy and security laws, regulations, and other obligations are constantly evolving, may conflict with each other to make compliance efforts more challenging, and can result in investigations, proceedings, or actions that lead to significant penalties and restrictions on data processing.

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 for download, 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, capital expenditures 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 our customers' capital expenditures or business activities. We have experienced significant cyclical end market fluctuations in the past. For example, diminished growth expectations, economic and political uncertainty in regions across the globe and effects of the COVID-19 pandemic adversely impacted our customers' financial condition and ability to maintain product order levels and reduced the demand for our products in 2020. In addition, certain sub-segments of the advanced industrial market that we serve, including the microelectronics and industrial capital equipment sector, 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 also faced increases in inflationary conditions in materials and components, and we expect these inflationary conditions to continue in 2023. These inflationary conditions have caused us to increase prices; however, such price increases may not be accepted by our customers or may not adequately offset the increases in our costs, thereby negatively affecting our results of operations. Changes in global economic conditions, including inflationary 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.

Our business and operations, and the operations of our suppliers and customers, have been, and may in the future be adversely affected by epidemics or pandemics such as the COVID-19 pandemic outbreak.

We may face risks related to health epidemics and pandemics or other outbreaks of communicable diseases. The COVID-19 pandemic and governments' measures taken in response have had a significant adverse impact, both direct and indirect, on our business and on the broader economy. We have, at times, experienced weakened demand from certain customers, which has adversely affected our revenues. For example, healthcare providers have, at times, deferred elective medical procedures in order to focus on combatting the pandemic, which significantly reduced demand for certain of our medical products.

We also faced difficulty sourcing some materials and components necessary to fulfill production requirements and meeting scheduled shipments due to suppliers' capacity constraints and shipping and transportation disruptions, the effect of which, coupled with other supply chain challenges, may continue to affect our operations in the foreseeable future. These disruptions have adversely affected our ability to manufacture our products and meet our customers' schedules. If we are not able to mitigate these disruptions effectively, our ability to manufacture our products or meet our customers' schedules would continue to be adversely affected, possibly materially, and our business could be harmed. In addition, efforts to find alternate sources of supply for such materials or components may increase our costs or lower the quality of our product, which could affect our profitability, financial condition and business.

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 in case of public health crises, epidemics and pandemics or other outbreaks of communicable diseases, including a resurgence of the COVID-19 or similar pandemics.

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 has prompted customers to look for alternative sources of supply and has left our customers without a supply, both of which have harmed our reputation and made it difficult for us to retain our existing customers or to obtain new customers. If this inability to increase production continues or worsens, it could have a material adverse effect on our business.

In periods of weaker demand, 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 also 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, to introduce new products in a timely manner, and to manage transitions to new product innovations effectively.

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. 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 also introduce new or improved products, processes or technologies that make our current or proposed products obsolete or less competitive. We may not manage the transition from older products effectively to minimize disruption in customer ordering patterns, avoid excess inventory and ensure adequate supplies of new products. New products may have fewer features than originally considered desirable, may have higher costs than initially estimated, may contain defects or perceived defects or have reliability, quality or compatibility problems or perceived problems. There have been, and may continue to be, difficulties in sourcing components for new products and delays in starting volume production. New products may also not be commercially successful as we cannot predict how the market will react to new products introduced by us or to enhancements made to our existing products. Failure to develop and introduce new products, failed market acceptance of new products or problems associated with new product transitions could impede our revenue growth, lead to loss of market share, and negatively affect our results of operations and our competitiveness in the market.

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

Changes in customer order timing and the existence of certain other factors 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 and pricing 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.

Cyberattacks or other incidents could cause significant disruption in, or breach the security of, our or our third-party providers' information technology systems, and our business may be adversely affected as a result.

We rely on information technology systems, software and services (collectively, "IT Systems") for internal and external operations. We operate some of these IT Systems ourselves and also rely on IT Systems provided by third parties to run our business, including to interact with our employees and our customers and suppliers. These interactions include, but are not limited to, ordering and managing materials from suppliers, converting materials to finished products, shipping product to customers, processing transactions, summarizing and reporting results of operations, complying with regulatory, legal and tax requirements, and other processes necessary to manage our business. We do not control our third-party service providers and we do not maintain redundant systems for some of such services, increasing our vulnerability to problems with such services. In addition, in the ordinary course of business, we and our third-party service providers collect, process and maintain confidential business information as well as personal information.

Like other global companies, there are constant cyber related threats and risks to our IT Systems and data, including by internal and external perpetrators of random or targeted malicious cyberattacks, computer viruses, malware, worms, bot attacks or other destructive or disruptive software (for example, ransomware) and attempts to misappropriate customer information and cause system failures and disruptions, as well as power outages, catastrophes, hardware and software bugs, misconfigurations or failures, and other unforeseen events. We have in the past experienced cyberattacks and other security incidents and expect to experience such attacks and incidents in the future. We expect the frequency and magnitude of cyberattacks to continue to accelerate as attackers are becoming increasingly sophisticated, for example, by using techniques designed to circumvent controls, avoid detection, and obfuscate forensic evidence, such that we may be unable to timely or effectively detect, identify, investigate or remediate attacks in the future. In addition, continued remote and hybrid working arrangements following the COVID-19 pandemic have increased the risk of cybersecurity incidents given the prevalence of phishing and vulnerabilities inherent in non-corporate and home computing environments.

If we were to experience a significant period of disruption in IT 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 IT Systems could result in the misappropriation or unauthorized disclosure of confidential business or personal information belonging to us or to our employees, customers, suppliers or other business partners, 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 IT Systems, and if we were to experience a significant breach in security, we may need to materially increase such expenditures, which could adversely affect our results of operations.

Our insurance policies may not cover all types of cybersecurity risks and liabilities, and even if coverages exist, they may not be sufficient to cover all costs or losses that we may incur.

Actual or perceived failures to comply with applicable data protection, privacy and security laws, regulations, standards, and other requirements may adversely impact our business and financial results.

Laws and regulations in various countries around the world with regards to cybersecurity, privacy and data protection are rapidly expanding and creating a complex compliance environment. These laws include evolving legislation with respect to the collection, storage, handling, use, disclosure, transfer, and security of personal data and the notification requirements in the event of unauthorized access to or acquisition of certain types of personal information. Failure to comply with these laws may affect our reputation and operating results negatively, subject us to significant liability, cost or expense, and may require significant management time and attention.

In some cases, these legal requirements may be either unclear in their interpretation and application or they may have inconsistent or conflicting requirements with each other. In addition, some of the privacy and data protection laws and regulations in the U.S., the EU, China and other countries place restrictions on our ability to process personal data across our business or across country borders, and could impact our business and operations. Compliance with these laws, many of which entail substantial penalties for non-compliance, or future regulations could impose even greater compliance burdens and risks on us.

The EU's General Data Protection Regulation (the "GDPR"), the California Consumer Privacy Act ("CCPA"), the California Privacy Rights Act ("CPRA"), and the data protection and security laws of other countries impose additional requirements with respect to disclosure and deletion of personal information of their residents, imposing penalties for violations and, in some cases, private right of action for data breaches. These laws, and similar legislation in other U.S. states that is developing or has been recently enacted, impose transparency and other obligations with respect to personal data of their respective residents and provide residents with similar rights for certain types of data breaches. We have invested, and continue to invest, human and technology resources in our data compliance efforts that may be time-intensive and costly. Despite our efforts, there is a risk that we may be subject to fines and penalties for non-compliance and experience litigation, reputational harm and business interruption if we fail to protect the privacy of third-party data or to comply with the GDPR, CCPA, CPRA and other applicable data privacy and protection 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, Chinese Yuan 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, Chinese Yuan or Japanese Yen, we 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. Consequently, a strong U.S. dollar may adversely affect reported revenues and our profitability.

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 exposures, we cannot be certain that our efforts will be adequate to protect us against significant foreign currency rate 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, 2022, approximately 57% 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;
- failure to comply with foreign laws and regulations, including those that potentially conflict with other jurisdictions;
- the impact of recessionary foreign economies;
- political unrest and wars, such as the current situation with Ukraine and Russia, which could delay or disrupt our business, and if such geopolitical unrest escalates or spills over to or otherwise impacts additional regions, it could heighten many of the other risk factors included in this Item 1A; and
- natural disasters, 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 component outsourcing to manufacturers located in different countries than Novanta's manufacturing facilities leads to additional risks that could negatively impact our business.

In some cases, we have outsourced the manufacturing of key components and subassemblies to suppliers based in countries outside of the country in which our manufacturing facility resides. We make the decision to outsource these products when we identify suppliers with stronger competencies, resources, capabilities, and lower cost structures than we believe we can develop on our own. However, the outsourcing of these products to such third parties could increase our exposure to geopolitical, economic, trade, and climate related risks, which 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 results of 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 some other countries, have escalated in recent years. For example, U.S. tariff impositions against Chinese exports in recent years were 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 may increase our costs and make our products less competitive than those of our competitors whose products are not subject to such retaliatory tariffs. If heightened tariffs or trade restrictions were to be imposed in the future, we may not be able to mitigate their impacts, 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 continuing impact of "Brexit" may have a negative effect on our business

Following a national referendum and subsequent legislation, the U.K. formally withdrew from the EU, commonly referred to as "Brexit," and ratified a trade and cooperation agreement governing its future relationship with the European Union. Among other things, the agreement, which became effective in 2021, addresses trade, economic arrangements, law enforcement, judicial cooperation and governance. Because the agreement merely sets forth a framework in many respects that requires complex additional bilateral negotiations between the U.K. and the EU, significant uncertainty remains about how the precise terms of the relationship between the parties will differ from the terms before Brexit.

Brexit has led to legal uncertainty and divergent national laws and regulations as the United Kingdom continues to determine which EU laws to replace or replicate, including financial laws and regulations, tax and free trade agreements, customs laws, intellectual property rights, environmental, health and safety laws and regulations, immigration laws, employment laws, and transport laws, which could increase the difficulty and cost of compliance. We cannot yet predict the full implications of Brexit, including whether it will increase our operational costs or otherwise have a negative effect on our business, financial condition or results of operations.

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 the claims allowed, even if patents are issued, 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. We expect that 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 recent and future acquisitions or to grow the acquired businesses as planned.

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 MPH Medical Devices S.R.O., ATI Industrial Automation, Inc., Schneider Electric Motion USA, Inc., ARGES GmbH, Med X Change, Inc., and Ingenia-CAT, S.L., and we expect to continue to make acquisitions in the future. We may fail to successfully 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 newly acquired operations into our existing businesses. We may fail to identify inherent weaknesses in acquired businesses or misinterpret market and technology trends and growth potentials during our acquisition due diligence process. 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 we may not be able to realize the expected return on our investments, 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. We have recently experienced increased turnover of key personnel, and the competition for skilled employees is intense. We have incurred increased expenses in connection with the retention of existing key personnel and hiring of new employees, and we expect these increased costs to continue. Additional losses 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 if the turnover rates for engineers and other key personnel increase significantly or if we are unable to continue to attract qualified personnel. The costs to retain or hire employees could also increase more than we expect.

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 the 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.

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, have adversely affected 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. Certain single source suppliers of key components for us could decide or have decided to stop producing some of these components. If we fail to find alternative sources, redesign our products or otherwise manage this transition effectively, our business would be adversely impacted. If we experience delays in receiving materials from certain of our key limited or single source suppliers, our relationship with customers may be harmed if such delays cause us to miss our scheduled shipment deadlines and our business could be adversely affected. 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 production 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. We experienced factory disruptions at certain of our U.K. and China facilities during 2022. If our production activities at any of our manufacturing facilities were again disrupted, including by mandatory power consumption reductions, natural disasters or other weather events, health epidemics, acts of terrorism or otherwise, our operations would be negatively impacted until we could establish alternative production and service operations. Significant production difficulties could also 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 make decisions to consolidate or move certain of our manufacturing facilities, or otherwise move our production of certain products to another facility, including the ongoing move of our air bearing spindles manufacturing from one of our U.K. sites to our facility in China. 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 and customs delays, travel and technology restrictions, tax issues, 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 regulations, which may impede or hinder the approval, certification or sale of our products and, in some cases, may ultimately result in an inability to obtain approval or certification of certain products or may result in the recall or seizure of previously approved or certified 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, medical devices must comply with the EU Medical Devices Regulation (Regulation (EU) No 2017/745), which repeals and replaces the EU Medical Devices Directive. All medical devices placed on the market in the EU must meet the general safety and performance requirements laid down in Annex I to the EU Medical Devices Regulation including the requirement that a medical

device must be designed and manufactured in such a way that, during normal conditions of use, it is suitable for its intended purpose. Medical devices must be safe and effective and must not compromise the clinical condition or safety of patients, or the safety and health of users and – where applicable – other persons, provided that any risks which may be associated with their use constitute acceptable risks when weighed against the benefits to the patient and are compatible with a high level of protection of health and safety, taking into account the generally acknowledged state of the art. To demonstrate compliance with the general safety and performance requirements, medical devices must undergo a conformity assessment procedure, which varies according to the type of medical device and its risk classification. Except for low risk medical devices (Class I), where the manufacturer can self-assess the conformity of its products with the general safety and performance requirements (except for any parts which relate to sterility, metrology or reuse aspects), a conformity assessment procedure requires the intervention of a notified body. The notified body would typically audit and examine the technical file and the quality system for the manufacture, design and final inspection of our devices. If satisfied that the relevant product conforms to the relevant general safety and performance requirements, the notified body issues a certificate of conformity, which the manufacturer uses as a basis for its own declaration of conformity. The manufacturer may then apply the European Conformity (“CE”) mark to the device, which allows the device to be placed on the market throughout the EU. If we fail to comply with applicable laws and regulations, we would be unable to affix the CE mark to our products, which would prevent us from selling them within the EU. The aforementioned EU rules are generally applicable in the EEA. Non-compliance with the above requirements would also prevent us from selling our products in these countries.

Compliance with these requirements is a prerequisite to be able to affix the CE mark to medical devices, without which they cannot be sold or marketed in the EU. The process of obtaining marketing approval, certification or clearance from the FDA, comparable agencies, or notified bodies 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 or certified in order for us to continue selling our products in those countries. There can be no assurance that we will receive the required approvals or certification for new products or modifications to existing products on a timely basis or that any approval or certification will not be subsequently withdrawn or conditioned upon extensive post-market study requirements.

In the EU, notified bodies must be officially designated to certify products and services in accordance with the EU Medical Devices Regulation. Several notified bodies have been designated under the EU Medical Devices Regulation. However, as the COVID-19 pandemic has significantly slowed down their designation process, the current designated notified bodies are facing a large amount of requests for (re)certification under the new regulations as a consequence, review times may have lengthened. This situation may impact the way we are conducting our business in the EU and the EEA and the ability of our notified body to timely review and process our regulatory submissions and perform its audits.

The FDA, other worldwide regulatory agencies, and notified bodies actively monitor compliance with local laws and regulations through review, inspection and audit of design and manufacturing practices, recordkeeping, reporting of adverse events, labeling and promotional practices. The FDA and other regulatory agencies worldwide 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 and other worldwide regulatory agencies 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. Similar requirements apply in foreign jurisdictions. 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, approvals or certifications, 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. For instance, the landscape concerning medical devices in the EU recently evolved. On May 26, 2021, the EU Medical Devices Regulation became applicable, and repealed and replaced the EU Medical Devices Directive and the EU Active Implantable Medical Devices Directive. Unlike directives, which must be implemented into the national laws of the EU member states, regulations are directly applicable (i.e., without the need for adoption of EU member state laws implementing them) in all EU member states. The EU Medical Devices Regulation is intended to establish a uniform regulatory framework across the EU for medical devices. These modifications may have an effect on the way we intend to develop our business in the EU and EEA.

There are currently different regulations in place in Great Britain as compared to both Northern Ireland and the EU. Ongoing compliance with both sets of regulatory requirements may result in increased costs for our business.

Furthermore, the U.K. government is currently drafting amendments to the existing legislation which is likely to result in further changes to the Great Britain regulations in the near future. For example, subject to transitional periods for validly-certified devices, the new Great Britain regulations are likely to require medical devices placed on the Great Britain market to be “UKCA” certified by a UK Approved Body in order to be lawfully placed on the market. The U.K. government has stated that the amended regulations are likely to apply starting in July 2024. Understanding and ensuring compliance with any new requirements is likely to lead to further complexity and increased costs to our business. If there is insufficient UK Approved Body capacity, there is a risk that our product certification could be delayed which might impact our ability to market products in Great Britain after the respective transition periods.

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. For example, on February 23, 2022, the FDA issued a proposed rule to amend the Quality System Regulation, which establishes current good manufacturing practice requirements for medical device manufacturers, to align more closely with the International Organization for Standardization standards. This proposal has not yet been finalized or adopted. Accordingly, it is unclear the extent to which this or any other proposals, if adopted, could impose additional or different regulatory requirements on us that could increase the costs of compliance or negatively affect our business. 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, approvals or certification, 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 or certification on a timely basis, suspensions of regulatory clearances or certifications, seizures or recalls of products, physician advisories or other field actions, or the withdrawal of product approval or certification by the FDA or other comparable agencies (or notified bodies where applicable) 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, state and foreign 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. A person or entity does not need to have actual knowledge of the statute or specific intent to violate it to be deemed to have committed a violation;
- 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. In addition, the government may

assert that a claim including items or services resulting from a violation of the U.S. federal Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the False Claims Act;

- the federal Health Insurance Portability and Accountability Act of 1996 (“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. Similar to the U.S. federal Anti-Kickback Statute, a person or entity does not need to have actual knowledge of the statute or specific intent to violate it to be deemed to have committed a violation;
- 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”, which requires 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 including physician assistants and nurse practitioners, 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) 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) 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.

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

We rely on centralized information systems to keep financial records, process orders, manage inventory, process shipments to customers, and operate other critical functions. We often need to upgrade our information technology infrastructure, including implementing new or upgrading existing 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 new or upgraded 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, 2022, we had \$654.7 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 OEM customers subjects us to credit, inventory, business concentration, and business failure risks beyond our control.

Our sales 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.

Increasing scrutiny and changing expectations from investors, customers, and governments with respect to Environmental, Social and Governance (“ESG”) policies and practices may cause us to incur additional costs or expose us to additional risks.

There has been increased public focus and scrutiny from investors, governmental and nongovernmental organizations, and customers on corporate ESG practices in recent years, including with respect to global warming and climate change, diversity, equity and inclusion, and labor and human rights, among other ESG issues. Both the standard setting and regulatory landscapes are extremely complex and present significant compliance challenges. Many different organizations are promulgating reporting standards and rules that focus on a myriad of ESG topics. In March 2022, the SEC published its proposed rule, “The Enhancement and Standardization of Climate-Related Disclosures for Investors,” which sets forth certain prescriptive rules that, if adopted as proposed, will significantly increase our reporting obligations and cost of compliance. In November 2022, the European Commission approved the Corporate Sustainability Reporting Directive (“CSRD”), which will affect both European businesses and their parent companies, including non-EU entities that exceed certain thresholds or meet other requirements. As we continue to focus on developing our ESG practices, such

practices may not meet the standards of all of our stakeholders and advocacy groups may campaign for further changes. Many of our large, global customers are also committing to long-term targets to reduce greenhouse gas emissions within their supply chains. If we are unable to support customers in achieving these reductions, we may lose revenue if our customers find other suppliers who are better able to support such reductions. A failure, or perceived failure, to respond to expectations of all key stakeholders could cause harm to our business and reputation and have a negative impact on the market price of our common shares. Further, organizations that provide information to investors on corporate governance and related matters have developed ratings processes for evaluating companies on ESG matters. Such ratings are used by some investors to inform their investment or voting decisions. Unfavorable ESG ratings could lead to negative investor sentiment toward us and/or our industry, which could have a negative impact on our access to and costs of capital.

In addition, concerns over climate change and sustainability have led to foreign and domestic legislative and regulatory initiatives directed at limiting carbon dioxide and other greenhouse gas emissions. We may experience increased costs in order to execute upon our sustainability goals and comply with future climate-change related government mandates as well as stricter environmental protection laws, which could have an adverse impact on our results of operations and financial condition. 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.

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, 2022, we had outstanding debt of \$440.3 million under our amended and restated senior secured credit agreement (as amended, the “Third Amended and Restated Credit Agreement”) and \$336.6 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 financing 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, 2022, we had \$440.3 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, as amended, 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 with varying tax rates, (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, 2022, 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. This could result in significant costs to us and could require us to divert substantial resources.

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, 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, 2022 are listed in the table below.

<u>Location</u>	<u>Principal Use</u>	<u>Current Segment</u>	<u>Approximate Square Feet</u>	<u>Owned/Leased</u>
Bedford, Massachusetts United States	Manufacturing, R&D, Marketing, Sales and Administration	Photonics, Precision Motion & Corporate	147,000	Leased; expires in 2031
Apex, North Carolina United States	Manufacturing, R&D, Marketing, Sales and Administration	Precision Motion	138,000	Leased; expires in 2028
Ludwigsstadt Germany	Manufacturing	Vision	105,000	Owned
Přelouč Czech Republic	Manufacturing	Vision	95,000	Owned
Wackersdorf Germany	Manufacturing, R&D, Marketing, Sales and Administration	Photonics	68,000	Owned
Mukilteo, Washington, United States	Manufacturing, R&D, Marketing, Sales and Administration	Photonics	63,000	Owned

Additional manufacturing, research and development, sales, service and logistics sites are located in California, Connecticut, Florida, Michigan, New York, and Oregon within the United States, and in China, Czech Republic, Germany, Italy, Japan, Mexico, Spain and the United Kingdom. These additional facilities cover approximately 690,000 square feet, of which approximately 580,000 square feet are leased and approximately 110,000 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 21, 2023, there were approximately 32 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.

Recent Sales of Unregistered Securities

None

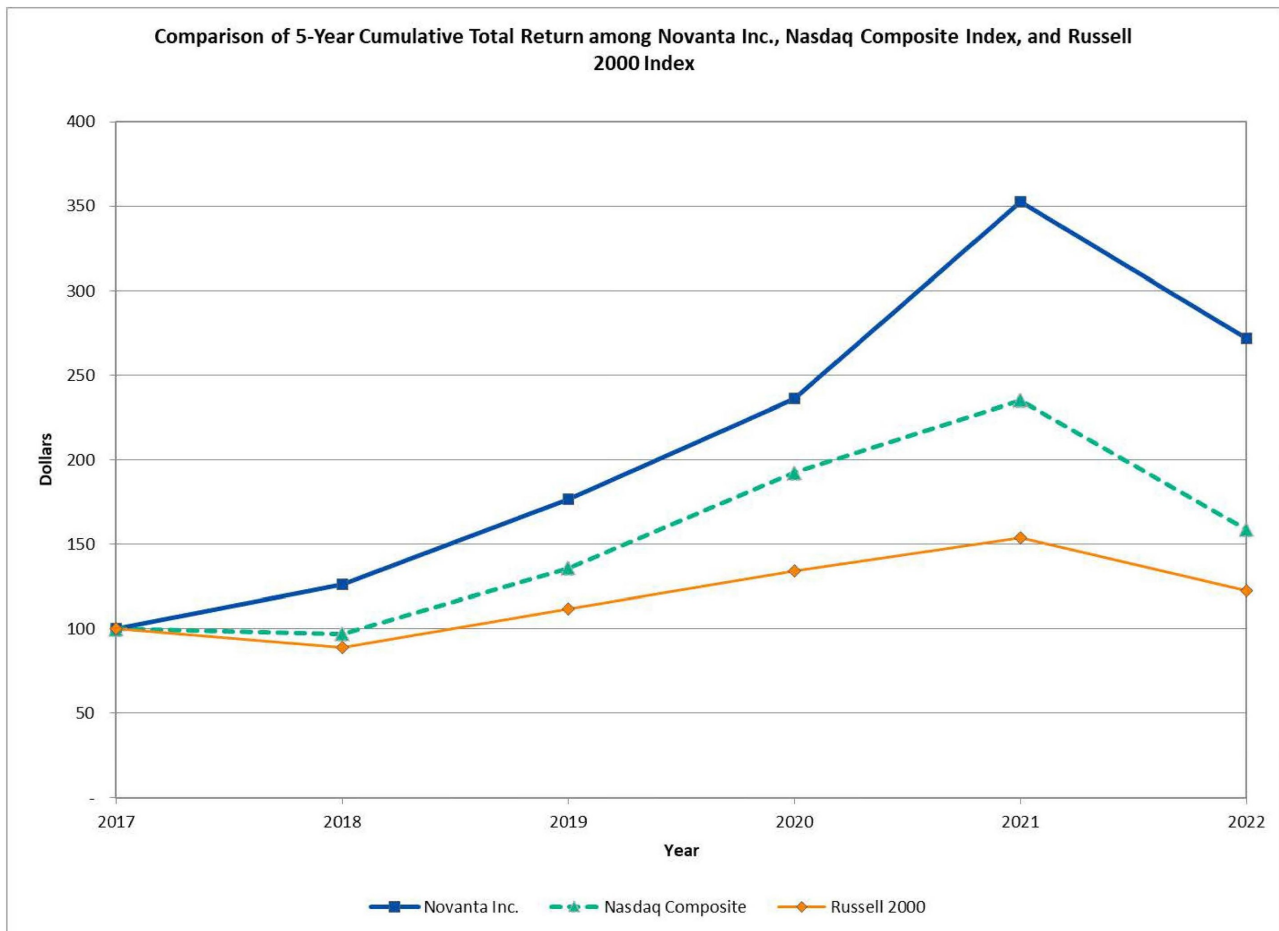
Purchases of Equity Securities by the Issuer and Affiliated Purchaser

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 the Company's common shares. The Company completed the 2018 Repurchase Plan in the second quarter of 2022 and repurchased 80 thousand shares for an aggregate purchase price of \$9.5 million at an average price of \$118.97 per share in 2022 prior to the completion of the 2018 Repurchase Plan. The Company repurchased a cumulative total of 264 thousand shares at an average price of \$94.57 per share under the 2018 Repurchase Plan.

In February 2020, the Company's Board of Directors approved a new share repurchase plan (the "2020 Repurchase Plan"), authorizing the repurchase of \$50.0 million worth of the Company's common shares. During the year ended December 31, 2022, the Company repurchased 4 thousand shares for an aggregate purchase price of \$0.5 million at an average price of \$116.95 per share under the 2020 Repurchase Plan. No shares were repurchased during the three months ended December 31, 2022. As of December 31, 2022, the Company had \$49.5 million available for future share repurchases under the 2020 Repurchase Plan.

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, 2017 through December 31, 2022. The comparison assumes an investment of \$100 was made on December 31, 2017 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, 2017	December 31, 2018	December 31, 2019	December 31, 2020	December 31, 2021	December 31, 2022
Novanta Inc.	\$ 100.00	\$ 126.00	\$ 176.88	\$ 236.44	\$ 352.66	\$ 271.74
Nasdaq Composite Index	\$ 100.00	\$ 97.16	\$ 135.98	\$ 192.47	\$ 235.15	\$ 158.65
Russell 2000 Index ⁽¹⁾	\$ 100.00	\$ 88.96	\$ 111.66	\$ 133.95	\$ 153.80	\$ 122.37

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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, our financial results and our financial condition; our belief that the Purchasing Managers Index 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, including supply chain disruptions and constraints and inflationary pressures; 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, including environmental 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," "estimates," "plans," "could," "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, 2022, the medical market accounted for approximately 49% 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.

Advanced Industrial Market

For the year ended December 31, 2022, the advanced industrial market accounted for approximately 51% 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 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, intelligent end-of-arm robotic technology solutions, 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;
- 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, diverse, and motivated employees.

Significant Events and Updates

Acquisition of MPH Medical Devices S.R.O.

On August 11, 2022, we acquired 100% of the outstanding shares of MPH Medical Devices S.R.O. ("MPH"), a Czech Republic- based manufacturer of medical consumables with plastics specialization in making disposable tube-set-like products, for a total purchase price of €21.8 million (\$22.4 million), net of cash acquired. The acquisition was financed with borrowings under our revolving credit facility and cash available on hand. The addition of MPH has expanded the Company's manufacturing capacity and capabilities in medical disposable tube set products within the Vision reportable segment.

Business Environment

COVID-19 Pandemic

In response to the COVID-19 pandemic, we took proactive actions and incurred additional costs to protect the health and safety of our employees, including investments in technologies and monitoring equipment, testing employees for COVID-19 at certain locations and rearranging some of our facilities to accommodate social distancing and flexible post-pandemic work environment. These costs were not material in 2022.

Although COVID-19 restrictions have been relaxed in the U.S. and Europe, in response to outbreaks of infection in various locations within China, local governmental authorities continued to implement lockdown orders in some areas during 2022, significantly slowing economic and business activities. Our manufacturing and distribution operations in China have been impacted by these lockdowns.

There continue to be isolated COVID-19 outbreaks in certain regions of the world, but these outbreaks have not had a significant impact on our operations. The extent to which the COVID-19 pandemic will continue to impact our business, operations, financial condition, liquidity and results of operations in 2023 and beyond remains uncertain and unpredictable. For further discussion on the risks and uncertainties associated with the COVID-19 pandemic, refer to *Part I, Item 1A. Risk Factors*.

Global Supply Chain Disruptions

Over the past three years, we experienced disruptions to our supply chain as a result of the COVID-19 pandemic and global electronics and other raw material shortages. While we regularly monitor the manufacturing output of companies in our supply chain, disruptions to our suppliers and/or sub-suppliers could further challenge our ability to manufacture our products, adversely affecting our operations and customer relationships. To mitigate the risk of supply chain interruptions, we are identifying alternative suppliers and distributors, sourcing raw materials from different supplier and distributor locations, modifying our product designs to allow for alternative components to be used without compromising quality and performance, in-sourcing production of parts where feasible, and taking other actions to ensure a sustainable supply of raw materials. Additionally, restrictions on or disruptions of transportation, such as reduced availability of air transports, port closures and backlogs and increased border controls or closures, have resulted in higher costs and delays for obtaining raw materials from suppliers. Our supply chain disruptions and customer orders to secure supply have caused significantly elevated customer order backlog levels. As of December 31, 2022, our backlog was almost double our average pre-COVID backlog levels due to longer customer lead times. We anticipate that our customers will gradually shorten their order lead times as supply chain disruptions ease over time in the near future.

Inflationary Pressures

The COVID-19 pandemic and the global supply chain disruptions have caused inflationary pressures on the market prices for raw materials and components as well as increases in the costs of labor. Price increases were on average more than double the 2021 price increases for certain key raw materials and components. Similarly, the overall low unemployment rate and the competition for available talents resulted in average annual wage increases more than doubling 2021 average annual wage increases. We have generally been able to offset increases in these costs through various productivity cost reduction initiatives, as well as increasing our selling prices to pass through some of these higher costs to our customers. However, our ability to raise our selling prices depends on market conditions and competitive dynamics. Given the timing of our actions compared to the timing of these inflationary pressures, there may be periods during which we are unable to fully recover the increases in our costs. Additionally, the inflationary pressures have given rise to significant increases in interest rates as various governments used monetary policy to reduce inflation. As a result, our weighted average interest rate increased from approximately 2.3% as of December 31, 2021 to approximately 5.1% as of December 31, 2022.

Russia Ukraine Conflict

In February 2022, Russian forces invaded Ukraine. In response, the U.S., the EU, and several other countries imposed economic and trade sanctions and other restrictions (collectively, “global sanctions”) targeting Russia and Belarus. Russia then imposed retaliatory economic measures against the U.S., the EU, and several other countries. Our sales to Russia have not been material. We also do not have any assets, employees or third-party contractors in Russia or Ukraine. The duration of the conflict and further sanctions could have further impact on the global economy and inflation. Due to the uncertainty around the duration of the conflict, these longer-term factors are unknown to our business.

Overview of Financial Results

Total revenue for 2022 was \$860.9 million, an increase of \$154.1 million, or 21.8%, versus 2021. This increase was primarily due to revenue from acquisitions in 2021 and 2022 and increased demand in the advanced industrial and medical markets. The effect of our acquisitions resulted in an increase in revenue of \$93.3 million, or 13.2%. In addition, foreign exchange rates adversely impacted our revenue by \$36.9 million, or 5.2%, in 2021.

Operating income for 2022 was \$103.1 million, an increase of \$39.0 million, or 60.9%, versus 2021. This increase was primarily attributable to an increase in gross profit of \$78.1 million primarily attributable to higher revenue and a decrease in restructuring, acquisition and related charges of \$13.6 million, partially offset by an increase in research and development and engineering (“R&D”) expenses of \$13.2 million, selling, general and administrative (“SG&A”) expenses of \$29.7 million and amortization expense of \$9.8 million.

Basic earnings per common share (“basic EPS”) of \$2.08 in 2022 increased \$0.66 from the basic EPS of \$1.42 in 2021. Diluted earnings per common share (“diluted EPS”) of \$2.06 in 2022 increased \$0.65 from the diluted EPS of \$1.41 in 2021. The increases in basic EPS and diluted EPS were primarily attributable to the increase in operating income offset by the increase of income tax provision.

Specific components of our operating results for 2022 and 2021 are further discussed below.

Results of Operations

Information pertaining to fiscal year 2020 results of operations, including a year-over-year comparison with fiscal year 2021, was included in our Annual Report on Form 10-K for the year ended December 31, 2021 under Part II, Item 7, “Management’s Discussion and Analysis of Financial Position and Results of Operations,” which was filed with the SEC on March 1, 2022.

The following table sets forth external revenue by reportable segment for 2022 and 2021 (dollars in thousands):

	2022	2021	<u>% Change</u> <u>2022 vs. 2021</u>
Photonics	\$ 274,674	\$ 232,459	18.2 %
Vision	277,992	262,060	6.1 %
Precision Motion	308,237	212,274	45.2 %
Total	<u>\$ 860,903</u>	<u>\$ 706,793</u>	21.8 %

Photonics

Photonics segment revenue in 2022 increased by \$42.2 million, or 18.2%, versus 2021, primarily due to increased demand in the advanced industrial and medical markets.

Vision

Vision segment revenue in 2022 increased by \$15.9 million, or 6.1%, versus 2021, primarily due to increased demand for minimally invasive surgery products, partially offset by production delays as a result of shortages of raw materials and other supply chain disruptions.

Precision Motion

Precision Motion segment revenue in 2022 increased by \$96.0 million, or 45.2%, versus 2021, primarily due to \$88.0 million of revenue contributions from 2021 acquisitions and increased demand in advanced industrial and medical markets, partially offset by a decline in microelectronics market.

Gross Profit

The following table sets forth the gross profit and gross profit margin for each of our reportable segments for 2022 and 2021 (dollars in thousands):

	2022	2021
Gross profit:		
Photonics	\$ 129,173	\$ 107,993
Vision	108,713	100,890
Precision Motion	146,150	99,345
Unallocated Corporate and Shared Services	(5,564)	(7,900)
Total	<u>\$ 378,472</u>	<u>\$ 300,328</u>
Gross profit margin:		
Photonics	47.0 %	46.5 %
Vision	39.1 %	38.5 %
Precision Motion	47.4 %	46.8 %
Total	44.0 %	42.5 %

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 2022 increased \$21.2 million, or 19.6%, versus 2021, primarily due to an increase in both revenue and gross profit margin. Photonics segment gross profit margin was 47.0% for 2022, versus a gross profit margin of 46.5% for 2021. The increase in gross profit margin was primarily attributable to improved factory productivity and utilization, partially offset by supply chain disruptions and overall cost inflation.

Vision

Vision segment gross profit for 2022 increased \$7.8 million, or 7.8%, versus 2021, primarily due to an increase in both revenue and gross profit margin. Vision segment gross profit margin was 39.1% for 2022, compared with a gross profit margin of 38.5% for 2021. The increase in gross profit margin was primarily attributable to improved factory efficiency.

Precision Motion

Precision Motion segment gross profit for 2022 increased \$46.8 million, or 47.1%, versus 2021, primarily due to an increase in both revenue and gross profit margin. Precision Motion segment gross profit margin was 47.4% for 2022, compared with a gross profit margin of 46.8% for 2021. The increase in gross profit margin was primarily attributable to improved factory utilization, partially offset by supply chain disruption and overall cost inflation.

Operating Expenses

The following table sets forth operating expenses for 2022 and 2021 (dollars in thousands):

	2022	2021	% Change 2022 vs. 2021
Research and development and engineering	\$ 85,770	\$ 72,522	18.3%
Selling, general and administrative	158,901	129,155	23.0%
Amortization of purchased intangible assets	26,338	16,577	58.9%
Restructuring and acquisition related costs	4,384	18,020	(75.7)%
Total	<u>\$ 275,393</u>	<u>\$ 236,274</u>	16.6%

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 \$85.8 million, or 10.0% of revenue, in 2022, versus \$72.5 million, or 10.3% of revenue, in 2021. R&D expenses increased in terms of total dollars primarily due to higher compensation related expense and R&D expenses from businesses acquired in 2021.

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 \$158.9 million, or 18.5% of revenue, in 2022, versus \$129.2 million, or 18.3% of revenue, in 2021. SG&A expenses increased in terms of total dollars and as a percentage of revenue primarily due to SG&A expenses from businesses acquired in 2021 and increases in variable compensation and discretionary spending.

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 \$26.3 million, or 3.1% of revenue, in 2022, versus \$16.6 million, or 2.3% of revenue, in 2021. The increase, in terms of total dollars and as a percentage of revenue, was the result of more acquired intangible assets from the 2021 acquisitions.

Restructuring, Acquisition, and Related Costs

Restructuring, acquisition, and 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 \$4.4 million in 2022, versus \$18.0 million in 2021. The decrease in acquisition and related costs versus the prior year was primarily due to a \$3.3 million reduction in earnout expenses related to prior year acquisitions, a \$1.9 million reduction in legal fees and a \$4.4 million reduction in other acquisition and related expenses. The restructuring costs also decreased \$3.9 million related to decreased expenses for our restructuring plans.

Operating Income (Loss) by Segment

The following table sets forth operating income (loss) by segment for 2022 and 2021 (in thousands):

	2022	2021
Operating Income (Loss)		
Photonics	\$ 63,760	\$ 46,792
Vision	28,244	17,694
Precision Motion	60,294	52,676
Unallocated Corporate and Shared Services	(49,219)	(53,108)
Total	\$ 103,079	\$ 64,054

Photonics

Photonics segment operating income was \$63.8 million, or 23.2% of revenue, in 2022, versus \$46.8 million, or 20.1% of revenue, in 2021. The increase in operating income was primarily due to an increase in gross profit of \$21.2 million, and a decrease in restructuring, acquisition and related costs of \$1.6 million, partially offset by an increase in R&D spending of \$2.9 million and an increase in SG&A expenses of \$2.8 million.

Vision

Vision segment operating income was \$28.2 million, or 10.2% of revenue, in 2022, versus \$17.7 million, or 6.8% of revenue, in 2021. The increase in operating income was primarily due to an increase in gross profit of \$7.8 million, a decrease in restructuring, acquisition and related costs of \$3.1 million, and a decrease in amortization expenses of \$1.6 million, partially offset by an increase in SG&A expenses of \$1.9 million.

Precision Motion

Precision Motion segment operating income was \$60.3 million, or 19.6% of revenue, in 2022, versus \$52.7 million, or 24.8% of revenue, in 2021. The increase in operating income was primarily due to an increase in gross profit of \$46.8 million, and a decrease in restructuring, acquisition and related costs of \$4.2 million, partially offset by an increase in R&D spending of \$10.3 million, an increase in SG&A expenses of \$21.9 million and an increase in amortization of purchased intangible assets of \$11.2 million.

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 2022 decreased by \$3.9 million, or 7.3%, from 2021, primarily due to a decrease in costs related to COVID-19 testing for employees of \$3.3 million, and a decrease in restructuring, acquisition and related costs of \$4.7 million, partially offset by an increase in SG&A expenses of \$3.1 million.

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 2022 and 2021 (in thousands):

	2022	2021
Interest income (expense), net	\$ (15,616)	\$ (7,387)
Foreign exchange transaction gains (losses), net	\$ 67	\$ (127)
Other income (expense), net	\$ (371)	\$ (368)

Interest Income (Expense), Net

Net interest expense was \$15.6 million in 2022 versus \$7.4 million in 2021. The increase in net interest expense was primarily due to an increase in average debt levels and an increase in the weighted average interest rate on our senior credit facilities. The weighted average interest rate on our senior credit facilities was 3.24% and 2.16% during 2022 and 2021, respectively. Included in net interest expense was non-cash interest expense of approximately \$1.2 million for both 2022 and 2021, related to the amortization of deferred financing costs on our debt.

Foreign Exchange Transaction Gains (Losses), Net

Foreign exchange transaction gains (losses) were nominal in both 2022 and 2021.

Other Income (Expense), Net

Net other expenses were nominal in both 2022 and 2021.

Income Tax Provision

We recorded a tax provision of \$13.1 million in 2022, compared to a tax provision of \$5.8 million in 2021. The effective tax rate for 2022 was 15% of income before income taxes, compared to an effective tax rate of 10.4% of income before income taxes for 2021. Our effective tax rate for 2022 differed from the Canadian statutory rate of 29.0% primarily due to the mix of income earned in jurisdictions with varying tax rates, \$4.5 million benefit for foreign derived intangible income, \$3.1 million benefit from U.K. patent box deductions, \$2.3 million benefit from R&D and other tax credits, partially offset by \$2.0 million increase in valuation allowances and a \$2.1 million detriment related to disallowed compensation.

Our effective tax rate for 2021 differed from the Canadian statutory rate of 29.0% primarily due to the mix of income earned in jurisdictions with varying tax rates, \$2.6 million benefit from U.K. patent box deductions, \$5.1 million benefit from share-based compensation, \$1.4 million benefit from R&D and other tax credits, and \$1.2 million benefit for foreign derived intangible income, partially offset by \$1.1 million detriment related to disallowed compensation, and a \$0.9 million detriment on the establishment of a valuation allowance recorded on net operating losses and other timing items in certain tax jurisdictions.

On December 12, 2022, the EU member states agreed to implement the Organization for Economic Co-operation and Development's ("OECD") Pillar Two Model Rules to be effective as of January 2024. These rules will impose a global corporate minimum income tax rate of 15%. Other countries are also actively considering changes to their tax laws to adopt certain parts of the OECD's proposals. The OECD continues to release additional guidance on these rules. The Company is analyzing the impact and will continue to monitor the related developments.

Net Income

The consolidated net income was \$74.1 million for the year ended December 31, 2022, compared to \$50.3 million for the year ended December 31, 2021, reflecting the impact of the factors described above.

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 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 any future capital expenditures and other liquidity needs. In addition, we have the ability to expand our borrowing capacity by up to \$350.0 million by exercising the accordion feature under our revolving credit agreement. We may seek to raise additional capital, which could be in the form of bonds, convertible debt or preferred or common 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. There is no assurance that such capital will be available on reasonable terms or at all.

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 global pandemics and geopolitical conflicts, worsening supply chain disruptions and electronics and other material shortages, 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 operating income and the distribution of funds from our subsidiaries. However, as 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 our subsidiaries will be permitted to provide us with sufficient dividends, distributions or loans when necessary.

As of December 31, 2022, \$68.4 million of our \$100.1 million of cash and cash equivalents was held by our subsidiaries outside of North America. 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 \$150.3 million of our outstanding borrowings under our senior credit facilities were held in our subsidiaries outside of North America as of December 31, 2022. Additionally, we may use intercompany loans to address short-term cash flow needs from various subsidiaries.

We deferred \$2.8 million of U.S. payroll tax payments in 2020 in accordance with relief provisions under the CARES Act. We paid \$1.4 million of such deferred payroll tax payments during 2021. The remaining \$1.4 million was paid during 2022.

In May 2021, our shareholders approved a special resolution to amend the Company’s articles to authorize up to 7.0 million preferred shares for future issuance. Our Board of Directors may designate and issue one or more series of preferred shares in order to raise additional capital, provided that no shares of any series may be entitled to more than one vote per share. As of December 31, 2022, no preferred shares were issued and outstanding.

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 the second quarter of 2022, we repurchased 80 thousand shares for an aggregate purchase price of \$9.5 million at an average price of \$118.97 per share under the 2018 Repurchase Plan. We have completed the 2018 Repurchase Plan and have repurchased a cumulative total of 264 thousand shares at an average price of \$94.57 per share under the 2018 Repurchase Plan.

In February 2020, our Board of Directors approved a new share repurchase plan (the “2020 Repurchase Plan”) authorizing the repurchase of \$50.0 million worth of common shares, effective after the 2018 Repurchase Plan is completed. Share repurchases have been made under the 2020 Repurchase Plan pursuant to Rule 10b-18 under the Securities Exchange Act of 1934. During the year ended December 31, 2022, we repurchased 4 thousand shares for an aggregate purchase price of \$0.5 million at an average price of \$116.95 per share under the 2020 Repurchase Plan. As of December 31, 2022, we had \$49.5 million available for share repurchases under the 2020 Repurchase Plan.

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 term loan facility requires quarterly scheduled principal repayments of approximately €1.1 million that began 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 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 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.

On June 2, 2020, we entered into an amendment (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).

On October 5, 2021, we entered into an amendment (the “Fourth Amendment”) to the Third Amended and Restated Credit Agreement to exercise the accordion feature. The Fourth Amendment increased the revolving credit facility commitment under the Third Amended and Restated Credit Agreement by \$200.0 million, from \$495.0 million to \$695.0 million, and reset the uncommitted accordion feature to \$200.0 million for potential future expansion.

On March 10, 2022, the Company entered into an amendment (the “Fifth Amendment”) to the Third Amended and Restated Credit Agreement to extend the maturity date thereof from December 31, 2024 to March 10, 2027, update the pricing grid, replace LIBOR with SOFR as the reference rate for U.S. dollar borrowings, and increase the uncommitted accordion feature from \$200.0 million to \$350.0 million.

As of December 31, 2022, we had \$81.9 (€76.6) million term loan and \$358.4 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 0.00% to 0.75% per annum, determined by reference to our consolidated leverage ratio, or (b) the Term SOFR Loans, Alternative Currency Loans, and Letters of Credit Rate, as defined in the Third Amended and Restated Credit Agreement, plus a margin ranging between 0.75% and 1.75% 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 0.30% per annum, determined by reference to our consolidated leverage ratio. As of December 31, 2022, we had outstanding borrowings under the Third Amended and Restated Credit Agreement denominated in Euro and U.S. Dollars of \$150.3 million and \$290.0 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, 2022:

	Requirement	Actual as of December 31, 2022
Maximum consolidated leverage ratio ⁽¹⁾	3.50	2.24
Minimum consolidated fixed charge coverage ratio	1.50	7.74

⁽¹⁾ Maximum consolidated leverage ratio shall be increased to 4.00 for four consecutive quarters following a designated acquisition, as defined in the Fifth Amendment.

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 \$100.1 million as of December 31, 2022, versus \$117.4 million as of December 31, 2021. The net decrease in cash and cash equivalents is primarily attributable to \$59.0 million of debt repayments, \$46.3 million of contingent consideration payments related to acquisitions, \$22.4 million of cash considerations paid for the MPH acquisition, \$19.6 million of capital expenditures, \$11.7 million of payroll tax payments upon vesting of share-based compensation awards, \$10.0 million of repurchases of shares, and \$2.5 million of debt issuance costs in connection with the Fifth Amendment, partially offset by \$69.9 million of borrowings under our revolving credit facility used to fund the contingent consideration payment for the acquisition of ATI Industrial Automation Inc. (“ATI”) and the cash consideration for the MPH acquisition and cash provided by operating activities of \$90.8 million.

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):

	2022	2021
Cash and cash equivalents, end of year	\$ 100,105	\$ 117,393
Net cash provided by operating activities	\$ 90,779	\$ 94,625
Net cash used in investing activities	\$ (42,541)	\$ (306,704)
Net cash provided by (used in) financing activities	\$ (60,154)	\$ 204,753
Unused borrowing capacity available under the revolving credit facility, end of year	\$ 336,587	\$ 348,421

Operating Cash Flows

Cash provided by operating activities was \$90.8 million in 2022, versus \$94.6 million in 2021. Cash provided by operating activities decreased from 2021 primarily due to a \$48.6 million increase in inventories driven by increased customer demand and higher raw material purchases, and a bonus payout in 2022 of \$8.4 million compared to no bonus payout in 2021 as a result of the elimination of our 2020 annual bonus plan, partially offset by an increase in operating profit as a result of higher revenue.

Beginning in January 2022, the Tax Cuts and Jobs Act of 2017 (“TCJA”) requires R&D expenditures be capitalized and amortized for income tax purposes over five years for domestic research and fifteen years for foreign research, rather than being deducted as incurred. This has the effect of increasing our cash taxes and deferred tax assets. As this provision under the TCJA was not deferred, modified, or repealed with retroactive effect going back to January 1, 2022 during 2022, our operating cash flows have decreased by approximately \$11.3 million for the year ended December 31, 2022 as a direct result.

Investing Cash Flows

Cash used in investing activities was \$42.5 million in 2022, primarily driven by the MPH acquisition. We paid cash consideration of \$22.4 million, net of cash acquired. We also paid capital expenditures of \$19.6 million and a contingent consideration payment of \$1.5 million related to our 2016 asset acquisition of video signal processing and management technologies. We received \$0.8 million net working capital adjustment in 2022 related to our ATI acquisition.

Cash used in investing activities was \$306.7 million in 2021, primarily driven by the ATI and SEM acquisitions. In connection with these acquisitions, we paid cash considerations of \$284.7 million (net of cash acquired of \$14.6 million). We also paid capital expenditures of \$20.0 million and a contingent consideration payment of \$2.2 million related to our 2016 asset acquisition of video signal processing and management technologies.

We have no material commitments to purchase property, plant and equipment as of December 31, 2022. We expect to use approximately \$25 million to \$30 million in 2023 for capital expenditures related to investments in new property, plant and equipment for our existing businesses, which includes a significant one-time facility buildout project in the U.K. for our Solid State and Ultrafast Lasers products.

Financing Cash Flows

Cash used in financing activities was \$60.2 million in 2022, primarily due to \$59.0 million of term loan and revolving credit facility repayments, \$46.3 million of contingent consideration payments related to prior year acquisitions, \$11.7 million of payroll tax payments upon vesting of share-based compensation awards, \$10.0 million of repurchases of common stock, and \$2.5 million of debt issuance costs in connection with the Fifth Amendment, partially offset by \$69.9 million of borrowings under our revolving credit facility used to fund the contingent consideration paid for the ATI acquisition and the cash consideration paid for the MPH acquisition.

Cash provided by financing activities was \$204.8 million in 2021, primarily due to \$280.0 million of borrowings under our revolving credit facility used to fund the cash considerations paid for the ATI and SEM acquisitions, partially offset by \$32.4 million of term loan and revolving credit facility repayments, \$30.8 million of payroll tax payments upon vesting of share-based compensation awards, \$8.7 million of payment for the purchase of a building under a finance lease agreement, and \$1.8 million of contingent consideration payments related to prior year acquisitions.

In 2023, we are contractually required to make \$4.8 million in repayments under our term loan facility. In addition, we may make optional repayments under our revolving credit facility from time to time with available cash generated from future operating activities.

Other Liquidity Matters

Pension Plans

We maintain a defined benefit pension plan (the “U.K. Plan”) in Novanta Technologies U.K. 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 participants’ 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 rates, 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, 2022, the fair value of plan assets exceeded the projected benefit obligation under the U.K. Plan by \$2.0 million. Based on the results of the most recent funding valuation, our annual funding contributions are expected to be approximately \$1.0 million in 2023 and will increase by 2.9% per year until the next statutory funding valuation date in 2024.

Material Cash Requirements

Senior Credit Facilities

As of December 31, 2022, we had \$81.9 million (€76.6 million) term loan and \$358.4 million revolving credit facility borrowings outstanding under the Senior Credit Facilities. The term loan is payable in quarterly installments of approximately €1.1 million (\$1.2 million) with the final installment of €58.5 million (\$62.6 million) due upon maturity in March 2027. Borrowings under the revolving credit facility are due at maturity in March 2027.

As of December 31, 2022, the future interest payments under our Senior Credit Facilities are expected to be approximately \$96.5 million through maturity based on the current contractual term, with \$23.4 million payable within the next twelve months. These estimates are based on current interest rates on floating rate obligations, as defined in the Third Amended and Restated Credit Agreement, for the remainder of the contractual life of both the term loan and outstanding borrowings under the revolving credit facility, and the current commitment fee rate was used for the unused commitments under the revolving credit facility as of December 31, 2022. These estimates also assume only quarterly term loan payments are made and outstanding revolving credit facility remains unchanged throughout the contractual term. The actual interest payments will vary due to changes in our debt level and interest rate. See Note 11, “Debt,” in the Consolidated Financial Statements for further details of our debt obligations and the timing of expected future payments.

Operating and Finance Leases

We have entered into various lease agreements for office and manufacturing facilities, vehicles, and equipment used in the normal course of business. Undiscounted operating and finance lease obligations were \$66.5 million, with \$10.3 million payable within the next twelve months. See Note 12, “Leases,” in the Consolidated Financial Statements for further details of our obligations and the timing of expected future payments.

Purchase Obligations

Purchase obligations represent an estimate of all open purchase orders and contractual obligations in the ordinary course of business for which we have not received the goods or services. As of December 31, 2022, we had \$145.0 million of purchase obligations, with \$142.7 million payable within the next twelve months.

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. We recognize revenue in accordance with Accounting Standards Codification (“ASC”) 606, “Revenue from Contracts with Customers”. Under ASC 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 ASC 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 36 months. 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, storage, 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 operating income. If actual market conditions are more favorable than anticipated, inventory previously written down may be sold, resulting in lower cost of revenue and higher operating income 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. In addition to service-based awards granted to a wider employee base and stock options granted to certain members of the executive management team, we typically grant three types of performance-based awards to certain members of the executive management team: non-GAAP EPS performance-based restricted stock units (“EPS-PSUs”), operating cash flow performance-based restricted stock units (“OCF-PSUs”), and relative total shareholder return performance-based restricted stock units (“TSR-PSUs”). In January 2022, the Company granted Adjusted EBITDA performance-based restricted stock units to ATI employees (“ATI-PSUs”).

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 awards, net of estimated forfeitures.

For stock options, share-based compensation expenses are recognized based on the fair value of the stock options, which is determined using Black-Scholes option pricing model as of the date of grant. Share-based compensation expenses related to stock options are recognized on a straight-line basis ratably over the vesting period of the awards. Black-Scholes option pricing model includes various assumptions, including the expected term of the award, the expected volatility and the expected risk-free interest rate over the expected term of the award, expected dividend payments, and the fair value of the common stock underlying the awards.

For EPS-PSUs, OCF-PSUs and ATI-PSUs, share-based compensation expenses are recognized ratably over the vesting period when it is probable that specified performance targets are expected to be achieved based on management’s projections as of the end of each period. Management’s projections are revised, if necessary, in subsequent periods when underlying factors change the estimated probability of achieving the performance targets as well as the levels 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 expenses associated with EPS-PSUs, OCF-PSUs and ATI-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, share-based compensation expenses are recognized 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. Share-based compensation expenses related to TSR-PSUs are 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 estimated 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 used to value identifiable intangible assets 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.

The estimated fair value of real estate assets acquired in a business combination is estimated based on comparable sales information and other market data, if available, as well as using an income or cost approach, specifically the direct capitalization and replacement value approaches. The direct capitalization and replacement value approaches use key assumptions such as market rent estimates, capitalization rates, local multipliers and remaining useful life of the real estate assets. Assumptions used are subject to management judgment and changes in those assumptions could impact the estimation of the fair value.

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 estimated useful life assumptions for identifiable intangible assets, 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 levels 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 performed.

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 method 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 2022, using a quantitative assessment, noting no impairment. As of December 31, 2022, there were no indicators of impairment of our long-lived assets.

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 amounts, 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 in which 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 2022, we established a valuation allowance of \$2.0 million recorded on state R&D credits, net operating losses and other timing items in certain tax jurisdictions. The factors used to assess the likelihood of realization of deferred tax assets are the forecast of future taxable income, available tax planning strategies that could be implemented to realize the net deferred tax assets, potential for carryback and future reversals of deferred tax liabilities.

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, 2022, the Company's total amount of unrecognized tax benefits was \$4.2 million, of which \$3.7 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 due to 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 \$330.8 million as of December 31, 2022. The estimated unrecognized income and foreign withholding tax liabilities on these undistributed earnings is approximately \$3.6 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 statements. 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 a significant effect on us.

Item 7A. Quantitative and Qualitative Disclosures about Market Risk

We are exposed to market risks 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, Japanese Yen and Chinese Yuan. 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 \$117.1 million and net fair value of less than \$0.1 million as of December 31, 2022. A hypothetical 10% strengthening of the U.S. dollar against other currencies would result in an approximately \$0.2 million increase in the net fair value of our foreign currency contracts as of December 31, 2022. By contrast, a hypothetical 10% weakening of the U.S. dollar against other currencies would result in an approximately \$0.2 million decrease in the net fair value of our foreign currency contracts as of December 31, 2022.

Interest Rates

Our exposure to market risk associated with changes in interest rates relates primarily to our borrowings under our Senior Credit Facilities. We had \$440.3 million of outstanding variable rate debt as of December 31, 2022. A 100 basis point increase in interest rates at December 31, 2022 would increase our annual pre-tax interest expense by approximately \$4.4 million.

Item 8. Financial Statements and Supplementary Data

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, 2022 and 2021, and the related consolidated statements of operations, of comprehensive income, of stockholders’ equity and of cash flows for each of the three years in the period ended December 31, 2022, 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, 2022, 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, 2022 and 2021, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2022 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, 2022, based on criteria established in Internal Control - Integrated Framework (2013) issued by the COSO.

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.

Revenue Recognition

The Company's revenue was \$860.9 million for the year ended December 31, 2022. As described in Note 3 to the consolidated financial statements, management 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.

The principal consideration for our determination that performing procedures relating to revenue recognition is a critical audit matter is a high degree of auditor effort in performing procedures related to the Company's revenue recognition.

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 the revenue recognition process. These procedures also included, among others, (i) testing the completeness, accuracy and existence of revenue recognized for a sample of revenue transactions by obtaining and inspecting source documents, including purchase orders, invoices, and proof of shipment and (ii) confirming a sample of outstanding customer invoice balances as of December 31, 2022 and, for confirmations not returned, obtaining and inspecting source documents, including invoices, proof of shipment, and subsequent cash receipts, where applicable.

/s/ PricewaterhouseCoopers LLP

Boston, Massachusetts
March 1, 2023

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, 2022	December 31, 2021
ASSETS		
Current Assets		
Cash and cash equivalents	\$ 100,105	\$ 117,393
Accounts receivable, net of allowance of \$995 and \$556, respectively	137,697	115,617
Inventories	167,997	125,657
Prepaid income taxes and income taxes receivable	1,508	1,997
Prepaid expenses and other current assets	13,212	13,161
Total current assets	420,519	373,825
Property, plant and equipment, net	103,186	87,439
Operating lease assets	43,317	48,338
Deferred tax assets	15,113	12,206
Other assets	4,414	5,586
Intangible assets, net	175,766	220,989
Goodwill	478,897	479,500
Total assets	\$ 1,241,212	\$ 1,227,883
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current Liabilities		
Current portion of long-term debt	\$ 4,800	\$ 5,097
Accounts payable	75,225	68,514
Income taxes payable	13,660	4,514
Current portion of operating lease liabilities	7,793	7,334
Accrued expenses and other current liabilities	63,044	98,479
Total current liabilities	164,522	183,938
Long-term debt	430,662	429,361
Operating lease liabilities	40,808	45,700
Deferred tax liabilities	17,194	33,738
Income taxes payable	4,355	4,217
Other liabilities	6,085	9,638
Total liabilities	663,626	706,592
Commitments and Contingencies (Note 17)		
Stockholders' Equity:		
Preferred shares, no par value; Authorized shares: 7,000; No shares issued and outstanding	-	-
Common shares, no par value; Authorized shares: unlimited; Issued and outstanding: 35,711 and 35,601, respectively	423,856	423,856
Additional paid-in capital	55,155	53,768
Retained earnings	130,584	56,533
Accumulated other comprehensive loss	(32,009)	(12,866)
Total stockholders' equity	577,586	521,291
Total liabilities and stockholders' equity	\$ 1,241,212	\$ 1,227,883

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,		
	2022	2021	2020
Revenue	\$ 860,903	\$ 706,793	\$ 590,623
Cost of revenue	482,431	406,465	346,106
Gross profit	378,472	300,328	244,517
Operating expenses:			
Research and development and engineering	85,770	72,522	60,996
Selling, general and administrative	158,901	129,155	109,853
Amortization of purchased intangible assets	26,338	16,577	13,970
Restructuring, acquisition and related costs	4,384	18,020	3,810
Total operating expenses	275,393	236,274	188,629
Operating income	103,079	64,054	55,888
Interest income (expense), net	(15,616)	(7,387)	(6,564)
Foreign exchange transaction gains (losses), net	67	(127)	(942)
Other income (expense), net	(371)	(368)	21
Income before income taxes	87,159	56,172	48,403
Income tax provision	13,108	5,841	3,882
Consolidated net income	\$ 74,051	\$ 50,331	\$ 44,521
Earnings per common share (Note 9):			
Basic	\$ 2.08	\$ 1.42	\$ 1.27
Diluted	\$ 2.06	\$ 1.41	\$ 1.25
Weighted average common shares outstanding—basic	35,652	35,396	35,144
Weighted average common shares outstanding—diluted	35,909	35,781	35,654

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,		
	2022	2021	2020
Consolidated net income	\$ 74,051	\$ 50,331	\$ 44,521
Other comprehensive income (loss):			
Foreign currency translation adjustments, net of tax ⁽¹⁾	(18,674)	(3,457)	6,922
Pension liability adjustments, net of tax ⁽²⁾	(469)	2,832	(1,050)
Total other comprehensive income (loss)	(19,143)	(625)	5,872
Total consolidated comprehensive income	<u>\$ 54,908</u>	<u>\$ 49,706</u>	<u>\$ 50,393</u>

⁽¹⁾ The tax effect on this component of comprehensive income (loss) was nominal in 2022, 2021 and 2020.

⁽²⁾ The tax effect on this component of comprehensive income (loss) was \$(401), \$920 and \$(202) in 2022, 2021 and 2020, 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	Retained Earning (Deficit)	Accumulated Other Comprehensive Loss	Total
	# of Shares	Amount				
Balance at December 31, 2019	35,052	\$ 423,856	\$ 49,748	\$ (38,319)	\$ (18,113)	\$ 417,172
Consolidated 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 (loss), net of tax	—	—	—	—	5,872	5,872
Balance at December 31, 2020	35,163	423,856	58,992	6,202	(12,241)	476,809
Consolidated net income	—	—	—	50,331	—	50,331
Common shares issued under stock plans	660	—	—	—	—	—
Common shares withheld for taxes on vested stock awards	(222)	—	(30,830)	—	—	(30,830)
Repurchases of common shares	—	—	—	—	—	—
Share-based compensation	—	—	25,606	—	—	25,606
Other comprehensive income (loss), net of tax	—	—	—	—	(625)	(625)
Balance at December 31, 2021	35,601	423,856	53,768	56,533	(12,866)	521,291
Consolidated net income	—	—	—	74,051	—	74,051
Common shares issued under stock plans	276	—	—	—	—	—
Common shares withheld for taxes on vested stock awards	(82)	—	(11,721)	—	—	(11,721)
Repurchases of common shares	(84)	—	(10,000)	—	—	(10,000)
Share-based compensation	—	—	23,108	—	—	23,108
Other comprehensive income (loss), net of tax	—	—	—	—	(19,143)	(19,143)
Balance at December 31, 2022	<u>35,711</u>	<u>\$ 423,856</u>	<u>\$ 55,155</u>	<u>\$ 130,584</u>	<u>\$ (32,009)</u>	<u>\$ 577,586</u>

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,		
	2022	2021	2020
Cash flows from operating activities:			
Consolidated net income	\$ 74,051	\$ 50,331	\$ 44,521
Adjustments to reconcile consolidated net income to net cash provided by operating activities:			
Depreciation and amortization	53,158	43,394	38,293
Provision for inventory excess and obsolescence	2,988	3,627	4,002
Share-based compensation	23,108	25,606	23,119
Deferred income taxes	(18,654)	(3,945)	(4,113)
Loss (gain) on disposal of fixed assets	(61)	65	120
Contingent consideration adjustments	(1,443)	(99)	(6,632)
Inventory acquisition fair value adjustments	160	1,411	188
Write-off of unamortized deferred financing costs	624	-	-
Non-cash interest expense	1,229	1,170	1,045
Other non-cash items	356	74	157
Changes in assets and liabilities which provided/(used) cash, excluding effects from business acquisitions:			
Accounts receivable	(23,246)	(25,355)	18,026
Inventories	(48,547)	(19,078)	22,102
Prepaid expenses and other current assets	(814)	(3,117)	4,456
Prepaid income taxes, income taxes receivable and income taxes payable	489	(140)	6,015
Accounts payable, accrued expenses and other current liabilities	30,333	24,516	(14,484)
Other non-current assets and liabilities	(2,952)	(3,835)	3,424
Cash provided by operating activities	<u>90,779</u>	<u>94,625</u>	<u>140,239</u>
Cash flows from investing activities:			
Purchases of property, plant and equipment	(19,643)	(19,976)	(10,524)
Acquisition of businesses, net of cash acquired and working capital adjustments	(21,565)	(284,728)	—
Payment of contingent consideration related to acquisition of technology assets	(1,470)	(2,200)	(2,632)
Proceeds from sale of property, plant and equipment	137	200	-
Cash used in investing activities	<u>(42,541)</u>	<u>(306,704)</u>	<u>(13,156)</u>
Cash flows from financing activities:			
Borrowings under revolving credit facilities	69,941	280,000	—
Repayments under term loan and revolving credit facilities	(59,029)	(32,381)	(35,391)
Payments of debt issuance costs	(2,492)	(890)	(1,614)
Payments of withholding taxes from share-based awards	(11,721)	(30,830)	(8,554)
Payments of deferred and escrowed purchase price related to acquisitions	—	—	(31,021)
Payments of contingent considerations related to acquisitions	(46,254)	(1,836)	(1,135)
Repurchases of common shares	(10,000)	—	(5,500)
Purchase of building under finance lease	—	(8,743)	—
Other financing activities	(599)	(567)	(1,142)
Cash provided by (used in) financing activities	<u>(60,154)</u>	<u>204,753</u>	<u>(84,357)</u>
Effect of exchange rates on cash and cash equivalents	<u>(5,372)</u>	<u>(335)</u>	<u>3,384</u>
Increase (decrease) in cash and cash equivalents	(17,288)	(7,661)	46,110
Cash and cash equivalents, beginning of year	117,393	125,054	78,944
Cash and cash equivalents, end of year	<u>\$ 100,105</u>	<u>\$ 117,393</u>	<u>\$ 125,054</u>
Supplemental disclosure of cash flow information:			
Cash paid for interest	\$ 14,264	\$ 6,207	\$ 5,529
Cash paid for income taxes	\$ 20,291	\$ 11,304	\$ 5,879
Income tax refunds received	\$ 169	\$ 1,557	\$ 4,833
Supplemental disclosure of non-cash investing activity:			
Accruals for capital expenditures	\$ 1,681	\$ 708	\$ 166

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

**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
AS OF DECEMBER 31, 2022**

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.

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 such revisions are deemed to be necessary. The Company evaluates its estimates based on historical experience, current conditions, and various other assumptions that it believes are reasonable under the circumstances. Actual results could differ significantly from these estimates.

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.

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 its 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.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
AS OF DECEMBER 31, 2022

For the years ended December 31, 2022, 2021 and 2020, changes in the allowance for doubtful accounts were as follows (in thousands):

	2022	2021	2020
Balance at beginning of year	\$ 556	\$ 274	\$ 297
Addition to credit loss expense	532	121	158
Credit loss resulting from acquisitions	—	216	—
Write-offs, net of recoveries of amounts previously reserved	(92)	(45)	(207)
Exchange rate changes	(1)	(10)	26
Balance at end of year	<u>\$ 995</u>	<u>\$ 556</u>	<u>\$ 274</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, customs duties, 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, storage, disposal and transportation. The Company periodically reviews inventory quantities on hand and for excess or obsolescence by comparing on hand quantities to the forecasted product demand and production requirements or trailing historical usage of each product. The Company records a charge to cost of revenue for the amount required to reduce the carrying value of inventories to their 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 10 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 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.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
AS OF DECEMBER 31, 2022***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 at a reporting unit level, which is generally at least one level below a reportable segment, 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 reporting unit to its estimated fair value. The fair value of a reporting unit is estimated primarily using a discounted cash flow (“DCF”) method. 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 carrying value of the asset group 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 twelve 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.

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 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.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
AS OF DECEMBER 31, 2022

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 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 statements of operations ratably over the respective vesting periods, net of estimated forfeitures.

The Company also grants share-based awards that vest based on specified performance conditions or market conditions. Share-based compensation expenses for awards with performance conditions are recognized ratably over their vesting periods 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 estimated levels 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 recorded in the period such determination is made. Accordingly, share-based compensation expenses for awards with performance conditions may differ significantly from period to period based on changes to both the probability and the level of achievement against the performance targets. Share-based compensation expenses for awards with market conditions are based on the grant-date fair value, determined using the Monte-Carlo valuation model, and are recognized on a straight-line basis from the grant date to the end of the performance period. Compensation expenses for awards with market conditions will not be affected by the number of common shares that will ultimately be issued upon vesting at the end of the performance period.

The Company also grants stock options to certain members of the executive management team. Share-based compensation expenses associated with stock options are based on the grant-date fair value, determined using the Black-Scholes option pricing model, and are recognized on a straight-line basis ratably over the respective vesting period.

Advertising Costs

Advertising costs are expensed to selling, general and administrative expenses as incurred and were not material for 2022, 2021 and 2020.

Restructuring, Acquisition and 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 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.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
AS OF DECEMBER 31, 2022

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 to fluctuations in foreign currency exchange rates 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 foreign currency 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.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
AS OF DECEMBER 31, 2022

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 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.	In March 2022, the Company amended the Third Amended and Restated Credit Agreement and replaced LIBOR with SOFR as the new reference rate for U.S. dollar borrowings. The ASU did not have any impact on the Company’s consolidated financial statements.
In October 2021, the FASB issued ASU 2021-08, “Business Combinations (Topic 805): Accounting for Contract Assets and Contract Liabilities from Contracts with Customers.”	ASU 2021-08 requires that entities recognize and measure contract assets and liabilities acquired in a business combination in accordance with ASC 606, “Revenue from Contracts with Customers”. ASU 2021-08 also applies to contract assets or liabilities from other contracts to which the provisions of ASC 606 apply. The amendments in ASU 2021-08 do not affect the accounting for other assets or liabilities that may arise from revenue contracts with customers in accordance with ASC 606, such as refund liabilities, or in a business combination, such as customer-related intangible assets and contract-based intangible assets.	January 1, 2023. Early adoption is permitted.	The Company early adopted ASU 2021-08 as of January 1, 2022. The adoption of ASU 2021-08 did not have any material impact on the Company’s consolidated financial statements.

3. Revenue

The Company accounts for its revenue transactions in accordance with ASC 606, “Revenue from Contracts with Customers,” which requires entities to recognize revenue in a way that depicts the transfer of control over 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 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.

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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 and 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 36 months. 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, 2022 and December 31, 2021, contract liabilities were \$8.4 million and \$7.3 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, 2022 is primarily due to cash payments received in advance of satisfying performance obligations, partially offset by \$5.3 million of revenue recognized during the year that was included in the contract liability balance at December 31, 2021.

Disaggregated Revenue

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

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4. Business Combinations**2022 Acquisitions**

On August 11, 2022, the Company acquired 100% of the outstanding shares of MPH Medical Devices S.R.O. ("MPH"), a Czech Republic-based manufacturer of medical consumables with plastics specialization in making medical disposable tube set products, for a total purchase price of €21.8 million (\$22.4 million), net of cash acquired. The acquisition was financed with borrowings under the Company's revolving credit facility and cash available on hand. The addition of MPH has expanded the Company's capacity and capabilities in the medical disposable tube set products within the Vision reportable segment.

The acquisition of MPH has been accounted for as a business combination. The purchase price is allocated based upon a valuation of the fair values of assets acquired and liabilities assumed as of the acquisition date. The fair value of the real property were based on valuations using an income and cost approach, specifically the direct capitalization method and the replacement value approaches. These approaches are subject to key assumptions including market rent estimates, capitalization rates, local multipliers and remaining useful life. The sales comparison approach was not considered due to the limited data available on reasonable comparable properties. The Company's estimates and assumptions in determining the estimated fair value of certain assets and liabilities are subject to change within the measurement period (up to one year from the acquisition date) as a result of additional information obtained with regard to facts and circumstances that existed as of the acquisition date.

The total purchase price for MPH was allocated as follows (in thousands):

	Purchase Price Allocation
Cash	\$ 182
Accounts receivable	1,658
Inventories	957
Property, plant and equipment	12,094
Goodwill	9,863
Other assets	163
Total assets acquired	24,917
Accounts payable	562
Deferred tax liabilities	1,124
Other liabilities	664
Total liabilities assumed	2,350
Total assets acquired, net of liabilities assumed	22,567
Less: cash acquired	182
Purchase price, net of cash acquired	\$ 22,385

The purchase price allocation resulted in \$9.9 million of goodwill. As the MPH acquisition was structured as a stock acquisition, the goodwill is not deductible for income tax purposes. The goodwill recorded represents the anticipated future benefits from the expansion of the Company's manufacturing capacity and capabilities for the medical disposal tube set products.

The operating results of MPH were included in the Company's results of operations beginning on August 12, 2022. MPH contributed revenues of \$5.2 million and a profit before income taxes of \$0.4 million for the year ended December 31, 2022.

The pro forma financial information reflecting the operating results of MPH, as if it had been acquired as of January 1, 2021, would not differ materially from the operating results of the Company as reported for the year ended December 31, 2021.

2021 Acquisitions

On August 30, 2021, the Company acquired 100% of the outstanding shares of ATI Industrial Automation, Inc. ("ATI"), an Apex, North Carolina-based leading supplier of intelligent end-of-arm technology solutions to OEMs for advanced industrial and surgical robots for a total purchase price of \$213.2 million, net of cash acquired and net working capital adjustments. The purchase price consists of \$169.2 million cash paid at closing, net of cash acquired and net working capital adjustments, and \$44.0 million estimated fair value of contingent consideration as of the acquisition date. The initial cash purchase price was financed with borrowings under the Company's revolving credit facility and cash available on hand. The Company expects that the addition of ATI will complement and add intelligent technology solutions to further expand the Company's position in mission critical robotic applications within the Precision Motion reportable segment.

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On August 31, 2021, the Company acquired 100% of the outstanding shares of Schneider Electric Motion USA, Inc. (“SEM”), a Marlborough, Connecticut-based manufacturer of integrated motion control solutions and electronic controls for automation equipment for a total purchase price of \$114.7 million, net of cash acquired and working capital adjustments. The acquisition was financed with borrowings under the Company’s revolving credit facility. The Company expects that the addition of SEM will complement and expand the Company’s presence in life science applications and industrial automation applications within the Precision Motion reportable segment.

Allocation of Purchase Price

The acquisitions of ATI and SEM have been accounted for as business combinations. The purchase price for each acquisition is allocated based upon a valuation of the fair values 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 valuations using an income approach, specifically the multi-period excess earnings method for customer relationships and the relief-from-royalty method for developed technologies, trademarks and trade names. 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, technology obsolescence curves, and EBITDA margins. The excess of the purchase price over the fair values of tangible assets, identifiable intangible assets and assumed liabilities was recorded as goodwill for each acquisition.

ATI

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

	Purchase Price Allocation
Cash	\$ 10,709
Accounts receivable	12,596
Inventories	18,151
Property, plant and equipment	4,618
Operating lease assets	11,263
Intangible assets	52,800
Goodwill	134,420
Other assets	229
Total assets acquired	<u>244,786</u>
Accounts payable	5,135
Current portion of operating lease liabilities	1,740
Operating lease liabilities	9,525
Other liabilities	4,452
Total liabilities assumed	<u>20,852</u>
Total assets acquired, net of liabilities assumed	223,934
Less: cash acquired	10,709
Add: net working capital adjustment	820
Less: contingent consideration	44,000
Initial purchase price, net of cash acquired	<u>\$ 170,045</u>

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

	Estimated Fair Value	Weighted Average Amortization Period
Developed technologies	\$ 19,800	15 years
Customer relationships	23,900	15 years
Trademarks and trade names	5,600	15 years
Backlog	3,500	1 year
Total	<u>\$ 52,800</u>	

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
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The purchase price allocation resulted in \$52.8 million of identifiable intangible assets and \$134.4 million of goodwill. Goodwill amounting to \$134.4 million is expected to be deductible for U.S. 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) ATI's ability to grow the business with existing and new customers, including leveraging the Company's customer base; (ii) ATI's ability to grow the business through new product introductions; and (iii) cost improvements due to the integration of ATI's operations into the Company's existing infrastructure.

The operating results of ATI were included in the Company's results of operations beginning on August 31, 2021. ATI contributed revenues of \$34.0 million and a profit before income taxes of \$3.4 million to the Company's operating results for the year ended December 31, 2021. ATI's profit before income taxes for the period from the acquisition date through December 31, 2021 included amortization of inventory fair value adjustments and amortization of purchased intangible assets of \$3.5 million.

SEM

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

	Purchase Price Allocation
Cash	\$ 3,881
Accounts receivable	4,240
Inventories	2,499
Property, plant and equipment	452
Intangible assets	54,570
Goodwill	68,291
Other assets	776
Total assets acquired	<u>134,709</u>
Accounts payable	1,325
Deferred tax liabilities	12,400
Other liabilities	2,420
Total liabilities assumed	<u>16,145</u>
Total assets acquired, net of liabilities assumed	118,564
Less: cash acquired	3,881
Total purchase price, net of cash acquired	<u>\$ 114,683</u>

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

	Estimated Fair Value	Weighted Average Amortization Period
Developed technologies	\$ 9,110	15 years
Customer relationships	41,740	20 years
Trademarks and trade names	370	4 years
Backlog	3,350	1 year
Total	<u>\$ 54,570</u>	

The purchase price allocation resulted in \$54.6 million of identifiable intangible assets and \$68.3 million of goodwill. As the SEM acquisition was structured as a stock acquisition for income tax purposes, the goodwill is not 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) SEM's ability to grow the business with existing and new customers, including leveraging the Company's customer base; (ii) SEM's ability to grow the business through new product introductions; and (iii) cost improvements due to the integration of SEM's operations into the Company's existing infrastructure.

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The operating results of SEM were included in the Company's results of operations beginning on September 1, 2021. SEM contributed revenues of \$9.1 million and a profit before income taxes of \$0.3 million to the Company's operating results for the year ended December 31, 2021. SEM's profit before income taxes for the period from the acquisition date through December 31, 2021 included amortization of inventory fair value adjustment and amortization of purchased intangible assets of \$1.8 million.

Unaudited Pro Forma Information

The pro forma information presented below includes the effects of business combination accounting resulting from the acquisitions of ATI and SEM, including amortization of inventory fair value adjustments, amortization of intangible assets, interest expense on borrowings in connection with the acquisitions, acquisition costs, and the related tax effects, assuming that the acquisitions had been consummated as of January 1, 2020. The pro forma financial information is presented for comparative purposes only and is not necessarily indicative of the results of operations that actually would have been achieved if the acquisitions had taken place on January 1, 2020.

	Year Ended December 31,	
	2021	2020
Revenue	\$ 783,011	\$ 682,626
Consolidated net income	\$ 52,420	\$ 33,376

Acquisition Costs

The Company recognized acquisition costs of \$1.0 million, \$5.0 million and zero in the years ended December 31, 2022, 2021 and 2020, respectively, related to the acquisitions that occurred during these years, if any. 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, 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)
Other comprehensive income (loss)	(1,584)	(3,457)	1,873
Amounts reclassified from accumulated other comprehensive loss ⁽¹⁾	959	—	959
Balance at December 31, 2021	(12,866)	(5,753)	(7,113)
Other comprehensive income (loss)	(19,555)	(18,674)	(881)
Amounts reclassified from accumulated other comprehensive loss ⁽¹⁾	412	—	412
Balance at December 31, 2022	<u>\$ (32,009)</u>	<u>\$ (24,427)</u>	<u>\$ (7,582)</u>

⁽¹⁾ The amounts reclassified from accumulated other comprehensive loss were included in other income (expense) in the consolidated statements of operations.

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6. Goodwill, Intangible Assets and Impairment Charges**Goodwill**

The following table summarizes changes in goodwill during the year ended December 31, 2022 (in thousands):

	Amount
Balance at beginning of year	\$ 479,500
Goodwill from current year acquisitions	9,863
Effect of foreign exchange rate changes	(10,466)
Balance at end of year	<u>\$ 478,897</u>

Goodwill by reportable segment as of December 31, 2022 was as follows (in thousands):

	Reportable Segment			Total
	Photonics	Vision	Precision Motion	
Goodwill	\$ 208,387	\$ 167,891	\$ 253,848	\$ 630,126
Accumulated impairment of goodwill	(102,461)	(31,722)	(17,046)	(151,229)
Total	<u>\$ 105,926</u>	<u>\$ 136,169</u>	<u>\$ 236,802</u>	<u>\$ 478,897</u>

Goodwill by reportable segment as of December 31, 2021 was as follows (in thousands):

	Reportable Segment			Total
	Photonics	Vision	Precision Motion	
Goodwill	\$ 214,564	\$ 160,675	\$ 255,490	\$ 630,729
Accumulated impairment of goodwill	(102,461)	(31,722)	(17,046)	(151,229)
Total	<u>\$ 112,103</u>	<u>\$ 128,953</u>	<u>\$ 238,444</u>	<u>\$ 479,500</u>

Intangible Assets

Intangible assets as of December 31, 2022 and 2021, respectively, are summarized as follows (dollar amounts in thousands):

	December 31, 2022			Weighted Average Remaining Life (Years)
	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount	
Amortizable intangible assets:				
Patents and developed technologies	\$ 184,589	\$ (132,350)	\$ 52,239	10.1
Customer relationships	222,173	(121,527)	100,646	15.0
Trademarks and trade names	23,311	(13,457)	9,854	10.0
Amortizable intangible assets	<u>430,073</u>	<u>(267,334)</u>	<u>162,739</u>	13.2
Non-amortizable intangible assets:				
Trade names	13,027	—	13,027	
Total	<u>\$ 443,100</u>	<u>\$ (267,334)</u>	<u>\$ 175,766</u>	

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
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	December 31, 2021			Weighted Average Remaining Life (Years)
	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount	
Amortizable intangible assets:				
Patents and developed technologies	\$ 189,609	\$ (122,130)	\$ 67,479	10.7
Customer relationships	228,656	(104,386)	124,270	15.5
Customer backlog	6,862	(2,254)	4,608	0.7
Trademarks and trade names	23,976	(12,371)	11,605	10.5
Amortizable intangible assets	449,103	(241,141)	207,962	13.3
Non-amortizable intangible assets:				
Trade names	13,027	—	13,027	
Total	\$ 462,130	\$ (241,141)	\$ 220,989	

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,		
	2022	2021	2020
Amortization expense – cost of revenue	\$ 13,270	\$ 13,288	\$ 11,123
Amortization expense – operating expenses	26,338	16,577	13,970
Total amortization expense	\$ 39,608	\$ 29,865	\$ 25,093

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
2023	\$ 12,065	\$ 20,322	\$ 32,387
2024	9,805	17,053	26,858
2025	8,312	14,428	22,740
2026	6,949	12,275	19,224
2027	4,206	9,900	14,106
Thereafter	10,902	36,522	47,424
Total	\$ 52,239	\$ 110,500	\$ 162,739

Impairment Charges

The Company did not have any goodwill or indefinite-lived intangible asset impairment charges during 2022, 2021, or 2020.

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

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

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
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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 August 30, 2021, the Company acquired ATI. Under the purchase and sale agreement for the ATI acquisition, the former shareholders of ATI (the “Sellers”) are eligible to receive contingent consideration based on ATI’s fiscal year 2021 Adjusted EBITDA, as defined in the purchase and sale agreement. The contingent consideration would be payable in 2022 after the Sellers and the Company agree on the final amount for the Adjusted EBITDA. The estimated fair value of the contingent consideration 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 were recorded in the consolidated statement of operations in restructuring, acquisition, and related costs until the liability was fully settled. The fair value of the contingent consideration was \$44.0 million as of December 31, 2021. During 2022, the fair value of the contingent consideration was adjusted to \$45.0 million based on the final determination of ATI’s 2021 Adjusted EBITDA. The Company made the contingent consideration payment of \$45.0 million in August 2022. The estimated fair value of \$44.0 million included in the determination of the purchase price is reported as a cash outflow from financing activities in the consolidated statement of cash flows for 2022 while the remaining \$1.0 million payment is reported as a cash outflow from operating activities.

On July 31, 2019, the Company acquired ARGES GmbH (“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, acquisition, and related costs until the liability is fully settled. During 2020, the fair value of the contingent consideration was adjusted to €4.1 million (\$5.1 million). The Company made the first installment payment of €0.4 million (\$0.4 million) in March 2021 and adjusted the fair value of the contingent consideration to €3.3 million (\$3.8 million) as of December 31, 2021. The Company made the second installment payment of €0.3 million (\$0.4 million) in March 2022. Based on the revenue performance and revenue projections as of December 31, 2022, the fair value of the remaining contingent consideration was adjusted to €0.4 million (\$0.4 million). The installment payments have been reported as cash outflows from financing activities in the consolidated statement of cash flows for the respective periods.

On April 16, 2019, the Company acquired Ingenia CAT, S.L. (“Ingenia”). Under the purchase and sale agreement for the Ingenia acquisition, the 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 cash in three annual installments from 2020 to 2022. The estimated fair value of the contingent consideration of €5.8 million (\$6.6 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 were recorded in the consolidated statement of operations in restructuring, acquisition, and related costs until the liability was fully settled. The Company made the first installment payment of €1.0 million (\$1.1 million) in May 2020 and adjusted the fair value of the contingent consideration to €2.3 million (\$2.9 million) as of December 31, 2020. The Company made the second installment payment of €1.2 million (\$1.4 million) in May 2021 and adjusted the fair value of the contingent consideration to €1.5 million (\$1.7 million) as of December 31, 2021. During the three months ended July 1, 2022, the fair value of the remaining contingent consideration was adjusted to €1.8 million (\$1.9 million). The Company made the final installment payment of €1.8 million (\$1.9 million) in July 2022. The installment payments have been reported as cash outflows from financing activities in the consolidated statement of cash flows for the respective periods.

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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 former 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 cash 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 have been recorded as adjustments to the carrying value of the assets acquired and are amortized over the remaining useful life of the underlying assets. Based on revenue achievements against the target through the end of 2021, the Company recognized an aggregate fair value of €5.5 million (\$6.3 million) for the acquired intangible assets. The Company made the first installment payment of €2.4 million (\$2.6 million) in February 2020, the second installment payment of €1.8 million (\$2.2 million) in February 2021, and the final installment payment of €1.3 million (\$1.5 million) in March 2022. The installment payments have been reported as cash outflows from investing activities in the consolidated statement of cash flows for the respective periods.

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, 2022 (in thousands):

	Fair Value	Quoted Price in Active Market for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Other Unobservable Inputs (Level 3)
Assets				
Cash equivalents	\$ 1,369	\$ 1,369	\$ —	\$ —
Prepaid expenses and other current assets:				
Foreign currency forward contracts	391	—	391	—
	<u>\$ 1,760</u>	<u>\$ 1,369</u>	<u>\$ 391</u>	<u>\$ —</u>
Liabilities				
Accrued expenses and other current liabilities:				
Contingent considerations - Current	\$ 124	\$ —	\$ —	\$ 124
Foreign currency forward contracts	412	—	412	—
Other liabilities:				
Contingent considerations - Long-term	301	—	—	301
	<u>\$ 837</u>	<u>\$ —</u>	<u>\$ 412</u>	<u>\$ 425</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, 2021 (in thousands):

	Fair Value	Quoted Price in Active Market for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Other Unobservable Inputs (Level 3)
Assets				
Cash equivalents	\$ 1,711	\$ 1,711	\$ —	\$ —
Prepaid expenses and other current assets:				
Foreign currency forward contracts	137	—	137	—
	<u>\$ 1,848</u>	<u>\$ 1,711</u>	<u>\$ 137</u>	<u>\$ —</u>
Liabilities				
Accrued expenses and other current liabilities:				
Contingent considerations - Current	\$ 47,522	\$ —	\$ —	\$ 47,522
Foreign currency forward contracts	160	—	160	—
Other liabilities:				
Contingent considerations - Long-term	3,402	—	—	3,402
	<u>\$ 51,084</u>	<u>\$ —</u>	<u>\$ 160</u>	<u>\$ 50,924</u>

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During the years ended December 31, 2022 and 2021, there were no transfers between fair value levels.

Changes in the fair value of Level 3 contingent considerations for the year ended December 31, 2022 were as follows (in thousands):

	<u>Contingent Considerations</u>
Balance at December 31, 2021	\$ 50,924
Payments	(48,725)
Fair value adjustments	(1,382)
Effect of foreign exchange rates	(392)
Balance at December 31, 2022	<u>\$ 425</u>

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, 2022, the notional amount and fair value of the Company's foreign currency forward contracts was \$117.1 million and a net loss of less than \$0.1 million, respectively. As of December 31, 2021, the notional amount and fair value of the Company's foreign currency forward contracts was \$50.0 million and a net loss of less than \$0.1 million, respectively.

For the years ended December 31, 2022, 2021 and 2020, the Company recognized aggregate net loss of \$(2.4) million, net gain of \$1.3 million, and net gain of \$1.3 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 consolidated net income by the weighted average number of common shares outstanding during the year.

For diluted earnings per common share, the denominator includes the dilutive effect of outstanding common share equivalents. The dilutive effects of outstanding common share equivalents, including outstanding restricted stock units, stock options, relative total shareholder return performance-based restricted stock units ("TSR-PSUs") and other performance-based restricted stock units ("PSUs"), are determined using the treasury stock method. The dilutive effects of market-based contingently issuable shares from the TSR-PSUs are included in the weighted average common 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 from other PSUs are included in the weighted average common share calculation only when the performance targets have been achieved based on the cumulative achievement against the performance targets as of the end of the reporting period.

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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,		
	2022	2021	2020
Numerators:			
Consolidated net income	\$ 74,051	\$ 50,331	\$ 44,521
Denominators:			
Weighted average common shares outstanding— basic	35,652	35,396	35,144
Dilutive potential common shares	257	385	510
Weighted average common shares outstanding— diluted	35,909	35,781	35,654
Antidilutive potential common shares excluded from above	91	13	13
Earnings per Common Share:			
Basic	\$ 2.08	\$ 1.42	\$ 1.27
Diluted	\$ 2.06	\$ 1.41	\$ 1.25

For the year ended December 31, 2022, 12 thousand non-GAAP EPS performance-based restricted stock units and 37 thousand operating cash flow performance-based restricted stock units granted to certain members of the executive management team and 50 thousand performance-based restricted stock units granted to ATI Industrial Automation employees ("ATI-PSUs") 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, 2022.

For the year ended December 31, 2021, 45 thousand of non-GAAP EPS performance-based restricted stock units and 37 thousand of operating cash flow performance-based restricted stock units granted to certain members of the executive management team and 213 thousand 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, 2021.

For the year ended December 31, 2020, 45 thousand of non-GAAP EPS performance-based restricted stock units granted to certain members of the executive management team and 213 thousand 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, 2020.

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,	
	2022	2021
Raw materials	\$ 118,292	\$ 84,038
Work-in-process	23,328	20,600
Finished goods	25,738	19,486
Demo and consigned inventory	639	1,533
Total inventories	\$ 167,997	\$ 125,657

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Property, Plant and Equipment, Net

	December 31,	
	2022	2021
Cost:		
Land, buildings and improvements	\$ 86,026	\$ 78,906
Machinery and equipment	110,212	98,687
Total cost	196,238	177,593
Accumulated depreciation	(93,052)	(90,154)
Property, plant and equipment, net	<u>\$ 103,186</u>	<u>\$ 87,439</u>

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,		
	2022	2021	2020
Depreciation expense	<u>\$ 13,550</u>	<u>\$ 13,529</u>	<u>\$ 13,200</u>

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,	
	2022	2021
Accrued compensation and benefits	\$ 35,501	\$ 24,725
Accrued contingent considerations and earn-outs	124	47,522
Finance lease obligations	668	599
Contract liabilities, current portion	8,128	6,995
Accrued warranty	5,127	4,783
Other	13,496	13,855
Total	<u>\$ 63,044</u>	<u>\$ 98,479</u>

Accrued Warranty

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

	Year Ended December 31,		
	2022	2021	2020
Balance at beginning of year	\$ 4,783	\$ 4,919	\$ 5,756
Provision charged to cost of revenue	3,071	1,410	1,838
Warranty liabilities acquired from acquisitions	—	874	—
Use of provision	(2,615)	(2,326)	(2,805)
Foreign currency exchange rate changes	(112)	(94)	130
Balance at end of year	<u>\$ 5,127</u>	<u>\$ 4,783</u>	<u>\$ 4,919</u>

Other Long-term Liabilities

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

	December 31,	
	2022	2021
Finance lease obligations	\$ 4,652	\$ 5,309
Accrued contingent considerations and earn-outs	301	3,402
Other	1,132	927
Total	<u>\$ 6,085</u>	<u>\$ 9,638</u>

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11. Debt

Debt consisted of the following (in thousands):

	December 31,	
	2022	2021
Senior Credit Facilities – term loan	\$ 4,832	\$ 5,126
Less: unamortized debt issuance costs	(32)	(29)
Total current portion of long-term debt	4,800	5,097
Senior Credit Facilities – term loan	77,060	86,879
Senior Credit Facilities – revolving credit facility	358,413	346,579
Less: unamortized debt issuance costs	(4,811)	(4,097)
Total long-term debt	430,662	429,361
Total Senior Credit Facilities	\$ 435,462	\$ 434,458

Senior Credit Facilities

On December 31, 2019, the Company entered into an amended and restated credit agreement (the “Third Amended and Restated Credit Agreement”) with existing lenders for an aggregate credit facility of \$450.0 million, 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”). As amended, the Senior Credit Facilities mature in March 2027 and include an uncommitted accordion option pursuant to which the commitments under the revolving credit facility may be increased by an additional \$350.0 million in aggregate, subject to certain customary conditions.

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 option. 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 option to \$200.0 million for potential future expansion.

On October 5, 2021, the Company entered into an amendment (the “Fourth Amendment”) to the Third Amended and Restated Credit Agreement to exercise the accordion option. The Fourth Amendment increased the revolving credit facility commitment under the Third Amended and Restated Credit Agreement by \$200.0 million, from \$495.0 million to \$695.0 million, and reset the uncommitted accordion option to \$200.0 million for potential future expansion.

On March 10, 2022, the Company entered into an amendment (the “Fifth Amendment”) to the Third Amended and Restated Credit Agreement to extend the maturity date from December 31, 2024 to March 10, 2027, update the pricing grid, replace LIBOR with SOFR as the reference rate for U.S. dollar borrowings, and increase the uncommitted accordion option from \$200.0 million to \$350.0 million.

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 0.00% to 0.75% per annum, determined by reference to the Company’s consolidated leverage ratio, or (b) the Term SOFR Loans, Alternative Currency Loans, and Letter of Credit Rate, as defined in the Third Amended and Restated Credit Agreement, plus a margin ranging between 0.75% and 1.75% 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 0.30% 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

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subsidiaries; (iii) limitations on the disposition of assets; and (iv) limitations on indebtedness, investments, and liens. 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, 2022, the outstanding principal under the Company's term loan facility is scheduled to be repaid as follows (in thousands):

	<u>Principal Amount</u>
2023	\$ 4,832
2024	4,832
2025	4,832
2026	4,832
2027	62,564
Total debt repayments	<u>\$ 81,892</u>

The outstanding principal balance under the term loan facility is payable in quarterly installments of €1.1 million that began 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 any time through March 2027. The Company may be required to prepay outstanding loans under the Third Amended and Restated Credit Agreement with the net proceeds from 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, 2022, the Company had \$336.6 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 5.13% as of December 31, 2022. The commitment fee rate for the unused commitments under the revolving credit facility was approximately 0.28% as of December 31, 2022.

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 U.K. Investments Holding Limited and Novanta Technologies U.K. 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.

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The maximum potential amount of future payments that 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, 2022, the Guarantors were not expected to be required to perform under the Guarantee.

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 Fifth Amendment, the Company capitalized an additional \$2.5 million of deferred financing costs and recorded a \$0.6 million loss from the write-off of a portion of the unamortized deferred financing costs previously capitalized in connection with the Senior Credit Facilities. The Company allocated the deferred financing 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. Non-cash interest expense related to the amortization of the deferred financing costs was \$1.2 million, \$1.2 million and \$1.0 million in 2022, 2021 and 2020, 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, 2022 and 2021, 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 2023 and 2036. 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 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 included in the statements of operations for the periods indicated (in thousands):

	<u>Year Ended December 31,</u>		
	<u>2022</u>	<u>2021</u>	<u>2020</u>
Operating lease cost	\$ 10,387	\$ 8,533	\$ 7,693
Finance lease cost			
Amortization of right-of-use assets	602	602	989
Interest on lease liabilities	308	340	432
Variable lease cost	1,145	1,074	1,336
Total lease cost	<u>\$ 12,442</u>	<u>\$ 10,549</u>	<u>\$ 10,450</u>

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

	December 31,	
	2022	2021
Operating leases:		
Operating lease right-of-use assets	\$ 43,317	\$ 48,338
Current portion of operating lease liabilities	\$ 7,793	\$ 7,334
Operating lease liabilities	40,808	45,700
Total operating lease liabilities	\$ 48,601	\$ 53,034
Finance leases:		
Property, plant and equipment, gross	\$ 9,582	\$ 9,582
Accumulated depreciation	(5,670)	(5,068)
Finance lease assets included in property, plant and equipment, net	\$ 3,912	\$ 4,514
Accrued expenses and other current liabilities	\$ 668	\$ 599
Other liabilities	4,652	5,309
Total finance lease liabilities	\$ 5,320	\$ 5,908
Weighted-average remaining lease term (in years):		
Operating leases	8.2	9.0
Finance leases	6.5	7.5
Weighted-average discount rate:		
Operating leases	4.64%	4.72%
Finance leases	5.54%	5.54%

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

	Year Ended December 31,		
	2022	2021	2020
Cash paid for amounts included in lease liabilities:			
Operating cash flows from finance leases	\$ 308	\$ 340	\$ 432
Operating cash flows from operating leases	\$ 7,876	\$ 7,818	\$ 6,760
Financing cash flows from finance leases	\$ 599	\$ 9,310	\$ 1,321
Supplemental non-cash information:			
Right-of-use assets obtained in exchange for new operating lease liabilities	\$ 4,757	\$ 22,574	\$ 4,290
Right-of-use assets obtained in exchange for new finance lease liabilities	\$ -	\$ -	\$ -

During the year ended December 31, 2021, the Company paid \$8.7 million upon the exercise of an option to purchase a building under a finance lease agreement in Germany. The cash payment has been presented as a cash outflow from financing activities in the consolidated statement of cash flows for the year ended December 31, 2021.

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Future minimum lease payments under operating and finance leases expiring subsequent to December 31, 2022, 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 Ending December 31,	Operating Leases	Finance Leases
2023	\$ 9,353	\$ 946
2024	8,731	954
2025	8,335	954
2026	7,168	979
2027	6,325	1,003
Thereafter	20,263	1,505
Total minimum lease payments	60,175	6,341
Less: interest	(11,574)	(1,021)
Present value of lease liabilities	\$ 48,601	\$ 5,320

13. Stockholders' Equity and Share-Based Compensation

Preferred Shares

In May 2021, the Company's shareholders approved a special resolution to amend the Company's articles to authorize up to 7.0 million preferred shares for future issuance. The Company's Board of Directors is authorized to designate and issue one or more series of preferred shares, fix the rights, preferences and designation, as deemed necessary or advisable, relating to the preferred shares, provided that no shares of any series may be entitled to more than one vote per share. As of December 31, 2022, no preferred shares had been issued and outstanding.

Common Shares

The Company has an unlimited number of non-par value common shares authorized for issuance. 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, market prices 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 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 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. 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 2022, the Company completed the 2018 Repurchase Plan and repurchased 80 thousand shares for an aggregate purchase price of \$9.5 million at an average price of \$118.97 per share. From the inception of the 2018 Repurchase Plan, the Company repurchased a cumulative total of 264 thousand shares for an aggregate purchase price of \$25.0 million at an average price of \$94.57 per share.

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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. During 2022, the Company repurchased 4 thousand shares for an aggregate purchase price of \$0.5 million at an average price of \$116.95 under the 2020 Repurchase plan. As of December 31, 2022, the Company had \$49.5 million available for future share repurchases under the 2020 Repurchase plan.

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 2021, the Company's shareholders approved an 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 6,148,613, 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 May 13, 2031. As of December 31, 2022, there were 2,063,234 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,		
	2022	2021	2020
Selling, general and administrative	\$ 18,182	\$ 17,255	\$ 14,550
Research and development and engineering	2,414	2,294	3,301
Cost of revenue	2,512	3,008	4,684
Restructuring and acquisition related costs	—	3,049	584
Total share-based compensation expense	<u>\$ 23,108</u>	<u>\$ 25,606</u>	<u>\$ 23,119</u>

The expense recorded during each of the three years ended December 31, 2022, 2021 and 2020 included \$1.1 million, \$1.1 million and \$1.0 million, respectively, related to restricted stock units and deferred stock units granted to the members of the Company's Board of Directors.

As of December 31, 2022, the Company's outstanding equity awards for which compensation expense will be recognized in the future consisted of time-based restricted stock units, performance stock units and stock options granted under the Amended and Restated 2010 Incentive Plan. The Company expects to record an aggregate share-based compensation expense of \$33.5 million, net of estimated forfeitures, over a weighted average period of 1.27 years subsequent to December 31, 2022, for all outstanding Awards as of December 31, 2022.

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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 zero 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. Outstanding DSUs are converted into common shares upon Board members' resignation or retirement from the Board. During the year ended December 31, 2022, 52 thousand shares of outstanding DSUs were converted into common shares upon the retirement or resignation of certain board members. There were 38 thousand and 91 thousand DSUs outstanding as of December 31, 2022 and December 31, 2021, respectively, which were included in the calculation of weighted average basic shares outstanding for the respective period.

The table below summarizes activities during 2022 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, 2021	292	\$ 115.42		
Granted	120	\$ 136.53		
Vested	(156)	\$ 110.32		
Forfeited	(18)	\$ 127.46		
Unvested at December 31, 2022	<u>238</u>	\$ 128.26	1.05 years	\$ 32,175
Expected to vest as of December 31, 2022	<u>220</u>	\$ 127.92	1.05 years	\$ 29,939

⁽¹⁾ The aggregate intrinsic value is calculated based on the fair value of \$135.87 per share of the Company's common stock as of December 31, 2022 due to the fact that the restricted and deferred stock units carry a \$0 purchase price.

The total fair value of restricted stock units and deferred stock units that vested in 2022, based on the market price of the underlying shares as of the date of vesting, was \$21.5 million.

Performance Stock Units

The Company typically grants two types of performance-based restricted stock units 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 a 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.

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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 a 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.

In January 2022, the Company granted performance-based restricted stock units to ATI employees ("ATI-PSUs"). The number of common shares to be issued upon settlement following vesting is determined based on cumulative Adjusted EBITDA performance over a four-year performance period compared to specified targets and will be in the range of zero to 100% of the target number of shares. The Company recognizes the related compensation expense ratably over the performance period based on the number of shares that are deemed probable of vesting at the end of the four-year performance period. 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.

In February 2021, the Company granted operating cash flow performance-based restricted stock units ("OCF-PSUs") to certain members of the executive management team. Upon completion of the requisite service periods, the OCF-PSUs will vest in two tranches if the Company achieves the cumulative operating cash flow performance target for fiscal years 2021 through 2023 as approved by the Company's Board of Directors as of the date of grant. The first fifty percent of the OCF-PSU grant will vest at the end of the four-year service period from the date of grant and the remaining fifty percent of the OCF-PSU grant will vest at the end of the five-year service period from the date of grant. The Company recognizes the related compensation expense ratably over the requisite service period based on the expectation that 100 percent of the OCF-PSUs are deemed probable of vesting. 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.

The table below summarizes activities during 2022 relating to performance-based restricted stock units 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, 2021	162	\$ 122.26		
Granted	107	\$ 159.00		
Vested	(41)	\$ 108.58		
Forfeited	(12)	\$ 159.44		
Unvested at December 31, 2022	<u>216</u>	\$ 144.16	1.78 years	\$ 29,356
Expected to vest as of December 31, 2022	<u>244</u>	\$ 143.32	1.78 years	\$ 33,090

⁽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, 2022, the maximum number of PSUs available to be earned was approximately 341 thousand.

⁽²⁾ The aggregate intrinsic value is calculated based on the fair value of \$135.87 per share of the Company's common stock as of December 31, 2022 due to the fact that the performance stock units carry a \$0 purchase price.

The total fair value of PSUs that vested in 2022, based on the market price of the underlying shares on the date of vesting, was \$7.2 million.

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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, 2022	
Grant-date stock price	\$	137.29
Expected volatility		40.33 %
Risk-free interest rate		1.81 %
Expected annual dividend yield		—
Weighted average fair value	\$	144.38

Stock Options

In February 2022, the Company granted 40 thousand stock options to certain members of the executive management team to purchase common shares of the Company at a strike price equal to the closing market price of the Company's common shares on the date of grant. The stock options vest ratably over a three-year period from the date of grant and expire on the seventh anniversary of the date of grant. The Company estimates the fair value of stock options using the Black-Scholes valuation model. The Company recognizes compensation expense related to the stock options on a straight-line basis over the vesting period in the consolidated statement of operations.

The following table shows stock options that were outstanding and exercisable as of December 31, 2022 and the related weighted average exercise price, weighted average remaining contractual term and aggregate intrinsic value:

	Stock Options (In thousands)	Weighted Average Exercise Price	Weighted Average Remaining Contractual Term (years)	Aggregate Intrinsic Value ⁽¹⁾ (In thousands)
Outstanding as of December 31, 2021	60	\$ 14.13		
Granted	40	\$ 135.86		
Exercised	(16)	\$ 14.13		
Forfeited or expired	—	\$ —		
Outstanding as of December 31, 2022	<u>84</u>	<u>\$ 72.18</u>	4.63 years	<u>\$ 5,346.13</u>
Exercisable as of December 31, 2022	<u>44</u>	<u>\$ 14.13</u>	3.25 years	<u>\$ 5,345.73</u>
Expected to vest as of December 31, 2022	<u>40</u>	<u>\$ 135.86</u>	6.16 years	<u>\$ —</u>

⁽¹⁾ The aggregate intrinsic value is calculated as the difference between the closing market price of \$135.87 per share of the Company's common stock as of December 31, 2022 and the exercise price of the stock options.

The aggregate Black-Scholes fair value of \$1.9 million for the stock options granted during 2022 was estimated using the following assumptions as of the grant date:

	Year Ended December 31, 2022
Expected option term in years	4.5
Expected volatility	39.3 %
Risk-free interest rate	1.83 %
Expected annual dividend yield	—

The expected option term was calculated using the simplified method permitted under Codification of Staff Accounting Bulletins Topic 14, "Share-Based Payment". The expected volatility was determined based on the historical volatility of the Company's common shares over the expected option term. Risk-free interest rate was based upon treasury instrument whose term was six months longer than the expected option term. The expected annual dividend yield is zero as the Company does not have plans to issue dividends.

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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 \$5.9 million, \$4.4 million and \$4.2 million for the years ended December 31, 2022, 2021 and 2020, 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,		
	2022	2021	2020
Components of the net periodic pension cost:			
Interest cost	\$ 669	\$ 554	\$ 736
Expected return on plan assets	(1,286)	(1,120)	(1,340)
Amortization of actuarial losses	380	928	686
Amortization of prior service cost	32	31	29
Net periodic pension cost	<u>\$ (205)</u>	<u>\$ 393</u>	<u>\$ 111</u>

The actuarial assumptions used to compute the net periodic pension cost for the years ended December 31, 2022, 2021 and 2020, respectively, were as follows:

	Year Ended December 31,		
	2022	2021	2020
Weighted-average discount rate	1.8%	1.2%	1.9%
Weighted-average long-term rate of return on plan assets	3.2%	2.5%	3.6%

The actuarial assumptions used to compute the benefit obligations as of December 31, 2022 and 2021, respectively, were as follows:

	December 31,	
	2022	2021
Weighted-average discount rate	4.8%	1.8%
Rate of inflation	2.7%	3.2%

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.

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

	December 31,	
	2022	2021
Change in benefit obligation:		
Projected benefit obligation at beginning of year	\$ 41,398	\$ 47,200
Interest cost	669	554
Actuarial (gains) losses ⁽¹⁾	(12,135)	(3,303)
Benefits paid	(1,191)	(2,679)
Prior service cost	—	36
Foreign currency exchange rate changes	(4,144)	(410)
Projected benefit obligation at end of year	<u>\$ 24,597</u>	<u>\$ 41,398</u>
Accumulated benefit obligation at end of year	<u>\$ 24,597</u>	<u>\$ 41,398</u>
Change in plan assets:		
Fair value of plan assets at beginning of year	\$ 44,187	\$ 45,689
Actual return on plan assets	(12,927)	592
Employer contributions	971	1,055
Benefits paid	(1,191)	(2,679)
Foreign currency exchange rate changes	(4,431)	(470)
Fair value of plan assets at end of year	<u>\$ 26,609</u>	<u>\$ 44,187</u>
Funded status at end of year	<u>\$ 2,012</u>	<u>\$ 2,789</u>
Amounts included in accumulated other comprehensive loss not yet recognized in net periodic pension cost:		
Net actuarial losses at beginning of year	\$ (7,206)	\$ (10,958)
Net actuarial gains (losses) during the year	(2,078)	2,775
Prior service cost arising during the year	-	(36)
Amounts reclassified from accumulated other comprehensive income to income before income taxes	412	959
Foreign currency exchange rate changes	796	54
Net actuarial losses	<u>\$ (8,076)</u>	<u>\$ (7,206)</u>
⁽¹⁾ Actuarial (gains)/losses in the U.K. Plan for the years ended December 31, 2022 and 2021, respectively, primarily resulted from changes in the discount rate assumptions.		

The funded status of the U.K. Plan was included in other long term assets on the accompanying consolidated balance sheet as of December 31, 2022 and December 31, 2021, respectively.

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, 2022 (in thousands):

	Amount
2023	\$ 1,068
2024	1,405
2025	1,291
2026	1,498
2027	1,644
2028-2031	8,890
Total	<u>\$ 15,796</u>

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In the U.K., defined benefit pension plan funding valuations are conducted every three years 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 2023 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, 2022 (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⁾	\$ 17,025	\$ —	\$ —	\$ —	\$ 17,025
Fixed income ⁽²⁾	9,355	—	—	—	9,355
Cash	229	229	—	—	—
Total	\$ 26,609	\$ 229	\$ —	\$ —	\$ 26,380

⁽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 (12%), bonds (67%), other assets (20%) and cash (1%).

⁽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 (78%), other assets (13%), and cash (9%).

The following table summarizes the fair values of Plan assets by asset category as of December 31, 2021 (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⁾	\$ 30,774	\$ —	\$ —	\$ —	\$ 30,774
Fixed income ⁽²⁾	13,250	—	—	—	13,250
Cash	163	163	—	—	—
Total	\$ 44,187	\$ 163	\$ —	\$ —	\$ 44,024

⁽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 (39%), other assets (21%) and cash (5%).

⁽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 (88%), other assets (6%) and cash (6%).

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AS OF DECEMBER 31, 2022

15. Income Taxes

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

	Year Ended December 31,		
	2022	2021	2020
Income (loss) before income taxes:			
Canada	\$ (4,946)	\$ (1,371)	\$ (2,278)
U.S.	28,365	19,168	16,875
Other	63,740	38,375	33,806
Total	\$ 87,159	\$ 56,172	\$ 48,403

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

	Year Ended December 31,		
	2022	2021	2020
Current			
Canada	\$ 65	\$ 95	\$ 82
U.S.	17,205	205	1,324
Other	14,492	9,486	6,589
	31,762	9,786	7,995
Deferred			
Canada	—	493	(493)
U.S.	(15,370)	(2,133)	(1,256)
Other	(3,284)	(2,305)	(2,364)
	(18,654)	(3,945)	(4,113)
Total	\$ 13,108	\$ 5,841	\$ 3,882

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,		
	2022	2021	2020
Statutory Canadian tax rate	29.00%	29.00%	29.00%
Expected income tax provision at Canadian statutory tax rate	\$ 25,276	\$ 16,291	\$ 14,037
International tax rate differences	(6,289)	(3,621)	(3,483)
U.S. state income taxes, net	3	(249)	(108)
Withholding and other taxes	789	429	485
Permanent differences and other	(39)	921	259
Disallowed compensation	2,138	1,111	685
Foreign-derived intangible income	(4,467)	(1,211)	(1,063)
Tax credits	(2,256)	(1,408)	(2,016)
Statutory tax rate changes	—	489	429
Uncertain tax positions	(168)	(472)	(176)
Change in valuation allowance	2,048	918	(727)
Acquisition contingent consideration adjustments	(698)	87	(1,513)
Transaction costs	179	248	(23)
Provision to return differences	(19)	33	750
Windfall benefit from share-based compensation	(254)	(5,131)	(2,322)
U.K. patent box	(3,135)	(2,594)	(1,332)
Reported income tax provision	\$ 13,108	\$ 5,841	\$ 3,882
Effective tax rate	15.0%	10.4%	8.0%

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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, 2022 and 2021 are as follows (in thousands):

	December 31,	
	2022	2021
Deferred tax assets:		
Losses	\$ 9,954	\$ 9,358
Operating lease liabilities	11,117	12,200
Compensation related deductions	9,010	6,795
Inventories	9,368	6,594
Tax credits	2,624	2,786
R&D Capitalization	13,623	—
Warranty	836	700
Other	284	403
Total deferred tax assets	56,816	38,836
Valuation allowance on deferred tax assets	(14,568)	(12,608)
Net deferred tax assets	\$ 42,248	\$ 26,228
Deferred tax liabilities:		
Depreciation	\$ (4,049)	\$ (2,585)
Amortization	(26,746)	(32,117)
Operating lease right-of-use assets	(10,477)	(11,667)
Deferred revenue	(3,057)	\$ (1,391)
Total deferred tax liabilities	\$ (44,329)	\$ (47,760)
Net deferred income tax assets (liabilities)	\$ (2,081)	\$ (21,532)

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.

Beginning in January 2022, the Tax Cuts and Jobs Act of 2017 (“TCJA”) requires that research and development (“R&D”) expenditures be capitalized and amortized for income tax purposes over five years for domestic research and fifteen years for foreign research, rather than being deducted as incurred. This has the effect of increasing the Company's cash taxes and deferred tax assets. Since January 2022, the Company has recognized deferred tax assets of \$13.6 million for the relevant R&D expenditures. This provision also has an indirect benefit of 2.7% on the Company's effective tax rate for the twelve months ended December 31, 2022, as the Company's estimated Foreign Derived Intangible Income deduction has increased as a result of increased U.S. taxable income.

In 2022, the Company recorded an additional \$2.0 million valuation allowance. In 2021, the Company recorded an additional \$0.9 million valuation allowance. 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 forecast taxable income.

Valuation allowances continue 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 addition, the Company has established a valuation allowance on state R&D credits in 2022 which 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, 2022, the Company had net operating loss carryforwards of \$4.4 million (tax effected). Of this amount, approximately \$3.9 million relates to Canada and begins to expire starting in 2033 and had a full valuation allowance. The remainder \$0.5 million relates to various U.S. and other foreign jurisdictions, of which \$0.1 million can be carried forward indefinitely and the remaining \$0.4 million will begin to expire in 2023 through 2036. In addition, the Company had capital loss carryforwards of \$5.6 million, which can be carried forward indefinitely and had a full valuation allowance. Of this amount, \$4.9 million and \$0.7 million related to Canada and the U.K, respectively.

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As of December 31, 2021, the Company had net operating loss carryforwards of \$3.5 million (tax effected). Of this amount, approximately \$2.9 million relates to Canada and begin to expire starting in 2033 and have a full valuation allowance. The remainder \$0.6 million relates to various U.S. and other foreign jurisdictions, of which \$0.2 million can be carried forward indefinitely and the remaining \$0.4 million will begin to expire in 2022 through 2036. In addition, the Company had capital loss carryforwards of \$5.9 million, which can be carried forward indefinitely and had a full valuation allowance. Of this amount, \$5.1 million and \$0.8 million related to Canada and the U.K, respectively.

As of December 31, 2022, the Company had tax credit carryforwards of approximately \$3.0 million, which consist of approximately \$2.3 million relates to the U.S. and other immaterial foreign jurisdictions that will expire through 2038 and \$0.7 million tax credit carryforwards related to Canada that can be carried forward indefinitely. The Company has a \$2.5 million valuation allowance on the tax credit carryforwards.

As of December 31, 2021, the Company had tax credit carryforwards of approximately \$3.8 million. Of this amount approximately \$2.6 million relates primarily to the U.S. and other immaterial foreign jurisdictions and will expire through 2042. The remaining \$1.2 million tax credit carryforwards were related to Canada, of which \$0.5 million expired in 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 \$330.8 million as of December 31, 2022. The estimated unrecognized income tax and foreign withholding tax liability on these undistributed earnings is approximately \$3.6 million.

As of December 31, 2022, the Company's total amount of unrecognized tax benefits was \$4.2 million, of which \$3.7 million would favorably affect the effective tax rate if benefited. Over the next twelve months, the Company may need to reverse up to \$0.5 million of previously recorded 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.

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

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		<u>5,258</u>
Additions based on tax positions related to the current year		1,162
Additions for tax positions of prior years		9
Reductions to tax positions of prior years		(41)
Reductions to tax positions resulting from a lapse of the applicable statute of limitations		(1,591)
Settlements with tax authorities		—
Balance at December 31, 2021		<u>4,797</u>
Additions based on tax positions related to the current year		553
Additions for tax positions of prior years		34
Reductions to tax positions of prior years		(563)
Reductions to tax positions resulting from a lapse of the applicable statute of limitations		(572)
Settlements with tax authorities		—
Balance at December 31, 2022	<u>\$</u>	<u>4,249</u>

The Company recognizes interest and penalties related to uncertain tax positions in income tax provision. As of December 31, 2022 and 2021, the Company had approximately \$0.7 million and \$0.6 million, respectively, of accrued interest and penalties related to uncertain tax positions. During the years ended December 31, 2022, 2021 and 2020, the Company recognized \$0.1

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million, (\$0.1) million and \$0.2 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 2012.

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	2019 - Present
Canada	2017 - Present
United Kingdom	2020 - Present
Germany	2017 - Present
The Netherlands	2018 - Present
China	2012 - Present
Japan	2017 - Present

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,		
	2022	2021	2020
2022 restructuring	\$ 1,414	\$ —	\$ —
2020 restructuring	2,994	8,133	2,736
2019 restructuring	—	208	988
2018 restructuring	—	—	753
Total restructuring related charges	\$ 4,408	\$ 8,341	\$ 4,477
Acquisition and related charges	\$ (24)	\$ 9,679	\$ (667)
Total restructuring and acquisition related costs	\$ 4,384	\$ 18,020	\$ 3,810

2022 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 2022 restructuring program in the third quarter of 2022. 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 is focused on cost reduction actions that improve gross margins for the overall company. During the year ended December 31, 2022, the Company recorded \$1.4 million in severance and facilities related costs in connection with the 2022 restructuring program. As of December 31, 2022, the Company had incurred cumulative costs related to this restructuring program totaling \$1.4 million. The Company anticipates substantially completing the 2022 restructuring program in the fourth quarter of 2023 and expects to incur additional restructuring charges of \$4.0 million to \$4.5 million related to the 2022 restructuring program.

The following table summarizes restructuring costs associated with the 2022 restructuring program by reportable segment (in thousands):

	Year Ended December 31, 2022
Photonics	\$ 1,162
Vision	56
Precision Motion	196
Unallocated Corporate and Shared Services	—
Total	\$ 1,414

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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 has been focused on cost reduction actions that improve gross margins for the overall company. During the year ended December 31, 2022, the Company recorded \$3.0 million in severance, facilities related costs, and other costs in connection with the 2020 restructuring program. As of December 31, 2022, the Company had recorded an aggregate \$13.9 million in severance, facilities related costs, and other costs in connection with the 2020 restructuring program. The Company anticipates substantially completing the 2020 restructuring program in the first quarter of 2023 and expects to incur additional restructuring charges of \$0.5 million to \$1.0 million related to the 2020 restructuring program.

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

	Year Ended December 31,			Cumulative Costs as of
	2022	2021	2020	December 31, 2022
Photonics	\$ 2,537	\$ 3,085	\$ 740	\$ 6,362
Vision	217	813	1,330	2,360
Precision Motion	238	4,206	524	4,968
Unallocated Corporate and Shared Services	2	29	142	173
Total	\$ 2,994	\$ 8,133	\$ 2,736	\$ 13,863

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	Employee Related	Facility Related	Other
Balance at December 31, 2020	\$ 1,800	\$ 1,681	\$ 116	\$ 3
Restructuring charges	8,341	6,462	1,309	570
Cash payments	(3,727)	(2,898)	(226)	(603)
Non-cash write-offs and other adjustments ⁽¹⁾	(3,728)	(3,138)	(649)	59
Balance at December 31, 2021	2,686	2,107	550	29
Restructuring charges	4,408	2,029	1,995	384
Cash payments	(3,486)	(2,198)	(931)	(357)
Non-cash write-offs and other adjustments	(1,198)	(36)	(1,162)	—
Balance at December 31, 2022	\$ 2,410	\$ 1,902	\$ 452	\$ 56

⁽¹⁾ Non-cash charges included stock-based compensation charges amounting to \$3.0 million associated with severance agreements for certain employees.

Acquisition and Related Charges

Acquisition and related costs incurred in connection with business combinations, primarily including finders' fees, legal, valuation and other professional or consulting fees, totaled \$1.4 million, \$5.9 million, and \$0.6 million during 2022, 2021, and 2020, respectively. The Company incurred legal costs of zero, \$1.9 million and \$1.7 million during 2022, 2021 and 2020, respectively, related to a dispute involving a company that was acquired in 2019. Acquisition related costs/(income) recognized under earn-out agreements in connection with acquisitions totaled \$(1.4) million, \$1.9 million, and \$(3.0) million during 2022, 2021, and 2020, respectively. The acquisition related costs/(income) for 2022 were \$(2.7) million, \$0.1 million, \$1.3 million and \$1.3 million for Photonics, Vision, Precision Motion, and Unallocated Corporate and Shared Services reportable segments, respectively.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
AS OF DECEMBER 31, 2022

17. Commitments and Contingencies***Purchase Commitments***

As of December 31, 2022, the Company had purchase commitments primarily for inventory purchases of \$145.0 million. These purchase commitments are expected to be incurred as follows: \$142.7 million in 2023 and \$2.3 million in 2024.

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 alleged 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 sought compensatory and punitive damages, lost profits and other relief. During the second quarter of 2021, the arbitrator formally closed the arbitration pursuant to a settlement between the parties. No financial damages payments were made by the Company.

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 on 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 on 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.

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 U.K. 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.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
AS OF DECEMBER 31, 2022

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 as of December 31, 2022 and 2021. 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. The 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 are summarized below:

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, particularly ophthalmology applications. 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 technologies, video 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.

Precision Motion

The Precision Motion segment designs, manufactures and markets optical and inductive encoders, precision motors, servo drives and motion control solutions, integrated stepper motors, intelligent robotic end-of-arm technology solutions, 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.

NOVANTA INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
AS OF DECEMBER 31, 2022

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,		
	2022	2021	2020
Revenue			
Photonics	\$ 274,674	\$ 232,459	\$ 199,613
Vision	277,992	262,060	261,650
Precision Motion	308,237	212,274	129,360
Total	\$ 860,903	\$ 706,793	\$ 590,623
	Year Ended December 31,		
	2022	2021	2020
Gross Profit			
Photonics	\$ 129,173	\$ 107,993	\$ 89,060
Vision	108,713	100,890	100,267
Precision Motion	146,150	99,345	58,279
Unallocated Corporate and Shared Services	(5,564)	(7,900)	(3,089)
Total	\$ 378,472	\$ 300,328	\$ 244,517
	Year Ended December 31,		
	2022	2021	2020
Operating Income (Loss)			
Photonics	\$ 63,760	\$ 46,792	\$ 34,001
Vision	28,244	17,694	16,354
Precision Motion	60,294	52,676	31,663
Unallocated Corporate and Shared Services	(49,219)	(53,108)	(26,130)
Total	\$ 103,079	\$ 64,054	\$ 55,888
	Year Ended December 31,		
	2022	2021	2020
Depreciation and Amortization Expenses			
Photonics	\$ 10,999	\$ 11,600	\$ 11,261
Vision	17,402	20,812	21,374
Precision Motion	24,358	10,728	5,443
Unallocated Corporate and Shared Services	399	254	215
Total	\$ 53,158	\$ 43,394	\$ 38,293
	December 31,		
	2022	2021	
Accounts Receivable			
Photonics	\$ 42,541	\$ 31,392	
Vision	53,610	44,078	
Precision Motion	41,546	40,147	
Total accounts receivable	\$ 137,697	\$ 115,617	
Inventories			
Photonics	\$ 58,630	\$ 49,146	
Vision	47,511	34,621	
Precision Motion	61,856	41,890	
Total inventories	\$ 167,997	\$ 125,657	
Total segment assets	\$ 305,694	\$ 241,274	

NOVANTA INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
AS OF DECEMBER 31, 2022

	December 31,	
	2022	2021
Total Assets		
Total segment assets	\$ 305,694	\$ 241,274
Cash and cash equivalents	100,105	117,393
Prepaid income taxes and income taxes receivable	1,508	1,997
Prepaid expenses and other current assets	13,212	13,161
Property, plant and equipment, net	103,186	87,439
Operating lease assets	43,317	48,338
Deferred tax assets	15,113	12,206
Other assets	4,414	5,586
Intangible assets, net	175,766	220,989
Goodwill	478,897	479,500
Total	\$ 1,241,212	\$ 1,227,883

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,					
	2022		2021		2020	
	Revenue	% of Total	Revenue	% of Total	Revenue	% of Total
United States	\$ 372,345	43.3 %	\$ 270,833	38.4 %	\$ 225,760	38.2 %
Germany	133,728	15.5	101,865	14.4	83,765	14.2
Rest of Europe	137,803	16.0	138,863	19.6	127,040	21.5
China	97,178	11.3	95,045	13.4	70,557	11.9
Rest of Asia-Pacific	101,596	11.8	89,198	12.6	74,334	12.6
Other	18,253	2.1	10,989	1.6	9,167	1.6
Total	\$ 860,903	100.0 %	\$ 706,793	100.0 %	\$ 590,623	100.0 %

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,	
	2022	2021
United States	\$ 27,488	\$ 27,587
Germany	36,545	33,344
U.K.	18,457	15,059
Czech Republic	13,779	637
China	6,518	6,521
Rest of World	399	4,291
Total	\$ 103,186	\$ 87,439

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS — (Continued)
AS OF DECEMBER 31, 2022

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,		
	2022	2021	2020
Medical	49%	52%	56%
Advanced Industrial	51%	48%	44%
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

No customer accounted for greater than 10% of the Company's consolidated revenue during the years ended December 31, 2022 and December 31, 2021. 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 the Company's consolidated revenue.

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, 2022

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, 2022. 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, 2022.

Changes in Internal Control Over Financial Reporting

During the quarter ended December 31, 2022, we completed the process of incorporating the internal controls for ATI Industrial Automation Inc. ("ATI") and Novanta Motion ("SEM"), both business acquisitions during 2021, into our internal control over financial reporting and extending our Section 404 compliance program under the Sarbanes-Oxley Act of 2002 and the applicable rules and regulations under such Act to include ATI and SEM.

Except as otherwise described above, there has been no change to our internal control over financial reporting during the fiscal quarter ended December 31, 2022 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, 2022. In making their assessment, our management utilized the criteria set forth in *Internal Control—Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO"). Based on our evaluation under the framework in *Internal Control—Integrated Framework* (2013), issued by COSO, our management concluded that our internal control over financial reporting was effective as of December 31, 2022.

The effectiveness of our internal control over financial reporting as of December 31, 2022 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

None.

Item 9C. Disclosure Regarding Foreign Jurisdictions that Prevent Inspections

Not applicable.

PART III

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 2023 Annual Meeting of Shareholders to be filed with the Securities and Exchange Commission.

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 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 following table sets forth information with respect to the Company’s directors and executive officers as of March 1, 2023:

Name	Age	Position with Novanta	Principal Employment
Executive Officers			
Matthijs Glastra	54	Chairman of the Board and Chief Executive Officer of Novanta	Same
Robert Buckley	48	Chief Financial Officer of Novanta	Same
Michele Welsh	49	General Counsel and Corporate Secretary of Novanta	Same
Brian Young	54	Chief Human Resources Officer of Novanta	Same
Non-Employee Directors			
Lonny J. Carpenter	61	Director, Independent Lead Director Chair of the Compensation Committee Member of the Environmental, Social and Governance (“ESG”) Committee	Former Group President of Stryker Corporation, a medical technologies company
Barbara B. Hulit	56	Director Member of the ESG Committee	Former Senior Vice President of Fortive Corporation, a diversified industrial technology growth company, and President and Chief Executive Officer of Fortive’s Advanced Healthcare Solutions segment
Maxine L. Mauricio	51	Director Chair of the ESG Committee	Executive Vice President, General Counsel and Secretary of EMCOR Group, Inc., a provider of facilities construction and industrial services
Katherine A. Owen	52	Director Member of the Audit Committee	Former Vice President and Advisor to the CEO of Stryker Corporation, a medical technologies company
Thomas N. Secor	52	Director Member of the Audit Committee Member of the ESG Committee	Managing Director of Morningside Heights Capital, an investment firm
Darlene J. S. Solomon	64	Director Member of the Compensation Committee	Senior Vice President and Chief Technology Officer of Agilent Technologies, Inc. a global leader in the life sciences, diagnostics and applied chemical markets
Frank A. Wilson	64	Director Chair of the Audit Committee Member of the Compensation Committee	Former Chief Financial Officer and Senior Vice President of PerkinElmer, Inc., a life sciences diagnostics, discovery and analytical solutions company

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 10, 2023 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 10, 2023 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 10, 2023 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 10, 2023 and is incorporated herein by reference.

Item 14. Principal Accountant 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 10, 2023 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†	Stock Purchase Agreement dated July 9, 2021, between Novanta Corporation and Schneider Electric Holding, Inc.	10-Q	001-35083	2.1	11/09/2021	
2.2†	Stock Purchase Agreement dated July 9, 2021, between Novanta Corporation, Novanta Technologies (Suzhou) Co. Ltd, ATI Industrial Automation, Inc. and ATI Industrial Automation (Lang Fang) Co. Ltd	10-Q	001-35083	2.2	11/09/2021	
3.1	Certificate and Articles of Continuance of the Registrant, dated March 22, 1999	S-3	333-202597	3.1	03/09/2015	
3.2	By-Laws of the Registrant, as amended	10-K	001-35083	3.2	03/01/2021	
3.3	Articles of Reorganization of the Registrant, dated July 23, 2010	8-K	000-25705	3.1	07/23/2010	
3.4	Articles of Amendment of the Registrant, dated May 26, 2005					*
3.5	Articles of Amendment of the Registrant, dated December 29, 2010	8-K	000-25705	3.1	12/29/2010	
3.6	Articles of Amendment of the Registrant, dated May 11, 2016	8-K	001-35083	10.1	05/12/2016	
3.7	Articles of Amendment of the Registrant, dated April 29, 2022	10-Q	001-35083	3.6	05/10/2022	
4.1	Specimen Stock Certificate	10-K	001-35083	4.1	02/28/2018	
4.2	Form of Indenture, between the Registrant and Wilmington Trust, National Association	S-3	333-229912	4.3	02/27/2019	
4.3	Description of Registrant's Securities Registered Pursuant to Section 12 of the Securities Exchange Act of 1934					*
10.1††	Novanta Inc. 2010 Incentive Award Plan (Amended and Restated Effective March 19, 2021), as amended	8-K	001-35083	10.1	05/17/2021	
10.2††	Form of Deferred Stock Unit Award Agreement	10-K	001-35083	10.59	03/30/2011	

Exhibit Number	Exhibit Description	Incorporated by Reference				Filed/ Furnished Herewith
		Form	File No.	Exhibit	Filing Date	
10.3††	Form of Stock Option Grant Notice and Stock Option Agreement	10-Q	001-35083	10.2	08/02/2016	
10.4††	Offer Letter, dated June 8, 2011, between GSI Group Inc. and Peter Chang	10-Q	001-35083	10.1	11/10/2011	
10.5	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	05/04/2012	
10.6††	Form of Performance Stock Unit Award Grant Notice and Performance Stock Unit Award Agreement	10-Q	001-35083	10.3	08/02/2016	
10.7††	Severance Agreement, dated as of August 15, 2012, between GSI Group Inc. and Peter Chang	10-Q	001-35083	10.7	11/07/2012	
10.8	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	01/03/2020	
10.9	Lease Agreement, dated as of May 31, 2013, by and between JADAK, LLC and Hancock Part Development, LLC	10-Q	001-35083	10.3	05/06/2014	
10.10††	Amended and Restated Employment Agreement, dated April 21, 2017, between Novanta Inc. and Matthijs Glastra	8-K	001-35083	10.1	04/24/2017	
10.11††	Amended and Restated Employment Agreement, dated April 21, 2017, between Novanta Inc. and Robert Buckley	8-K	001-35083	10.2	04/24/2017	
10.12††	Employment Agreement, dated April 21, 2017, between Novanta Inc. and Brian Young	8-K	001-35083	10.3	04/24/2017	
10.13††	Form of New Restricted Stock Unit Award Agreement	10-Q	001-35083	10.1	05/08/2017	
10.14††	Form of New Performance Stock Unit Award Grant Notice and Performance Stock Unit Award Agreement	10-Q	001-35083	10.2	05/08/2017	
10.15††	Form of Indemnification Agreement, by and between Novanta Inc. and certain officers and directors	10-Q	001-35083	10.2	11/01/2017	
10.16††	Form of Indemnification Agreement, by and between Novanta Corporation and certain officers and directors	10-Q	001-35083	10.3	11/01/2017	
10.17	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	05/08/2018	
10.18††	Novanta Inc. Non-Employee Director Compensation Policy					*

Exhibit Number	Exhibit Description	Incorporated by Reference				Filed/ Furnished Herewith
		Form	File No.	Exhibit	Filing Date	
10.19††	Form of Director Restricted Stock Unit Award Grant Notice and Restricted Stock Unit Award Agreement	10-Q	001-35083	10.2	11/06/2018	
10.20	First Amendment to Third Amended and Restated Credit Agreement, dated March 27, 2020	8-K	001-35083	10.1	03/31/2020	
10.21	Second Amendment to Third Amended and Restated Credit Agreement, dated June 2, 2020	10-Q	001-35083	10.1	08/06/2020	
10.22	Third Amendment to Third Amended and Restated Credit Agreement, dated September 22, 2021	10-Q	001-35083	10.1	11/09/2021	
10.23	Fourth Amendment to Third Amended and Restated Credit Agreement, Dated October 5, 2021	8-K	001-35083	10.1	10/07/2021	
10.24††	Form of Restricted Stock Unit Award Grant Notice and Agreement	10-Q	001-35083	10.2	05/11/2021	
10.25††	Form of Operating Cash Flow Performance Stock Unit Award Grant Notice and Agreement	10-Q	001-35083	10.3	05/11/2021	
10.26	Fifth Amendment to Third Amended and Restated Credit Agreement, dated March 10, 2022	8-K	001-35083	10.1	03/15/2022	
10.27††	Employment Agreement, dated July 11, 2022, between Novanta Inc. and Michele Welsh	10-Q	001-35083	10.1	08/09/2022	
21.1	Subsidiaries of the Registrant					*
23.1	Consent of Independent Registered Public Accounting Firm					*
31.1	Chief Executive Officer Certification pursuant to Section 302 of the Sarbanes-Oxley Act of 2002					*
31.2	Chief Financial Officer Certification 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					**

Exhibit Number	Exhibit Description	Incorporated by Reference				Filed/ Furnished Herewith
		Form	File No.	Exhibit	Filing Date	
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).					*

† Certain schedules or appendices to this exhibit have been omitted pursuant to Regulation S-K Item 601(a)(5). A copy of any omitted schedule will be furnished to the Securities and Exchange Commission or its staff upon request.

†† 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, 2023

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

Novanta Inc. (Registrant)

Name	Title	Date
/s/ Matthijs Glastra	Chair of the Board of Directors, Chief Executive Officer	March 1, 2023
Matthijs Glastra		
/s/ Robert J. Buckley	Chief Financial Officer	March 1, 2023
Robert J. Buckley		
/s/ Peter L. Chang	Chief Accounting Officer and Corporate Controller	March 1, 2023
Peter L. Chang		
/s/ Lonny J. Carpenter	Lead Director	March 1, 2023
Lonny J. Carpenter		
/s/ Barbara B. Hulit	Director	March 1, 2023
Barbara B. Hulit		
/s/ Maxine L. Mauricio	Director	March 1, 2023
Maxine L. Mauricio		
/s/ Katherine A. Owen	Director	March 1, 2023
Katherine A. Owen		
/s/ Thomas N. Secor	Director	March 1, 2023
Thomas N. Secor		
/s/ Darlene J.S. Solomon	Director	March 1, 2023
Darlene J.S. Solomon		
/s/ Frank A. Wilson	Director	March 1, 2023
Frank A. Wilson		

Canada
Nouveau Brunswick

CANADA
PROVINCE OF NEW BRUNSWICK
BUSINESS CORPORATIONS ACT
CERTIFICATE OF AMENDMENT
(SECTION 26, 117)

CANADA
PROVINCE DU NOUVEAU-BRUNSWICK
LOI SUR LES CORPORATIONS COMMERCIALES
CERTIFICAT DE MODIFICATION
(ARTICLE 26, 117)

GSI Group Inc.

Name of Corporation / Raison sociale de la corporation

508971

Corporation Number / Numéro de la corporation

I HEREBY CERTIFY that the Articles of the above-mentioned corporation were amended
JE CERTIFIE que les statuts de la corporation mentionnée ci-dessus ont été modifiés

- (a) under Section 11 of the Business Corporations Act in accordance with the attached notice;
en vertu de l'article 11 de la Loi sur les corporations commerciales conformément à l'avis ci-joint;
- (b) under Section 26 of the Business Corporations Act as set out in the attached Articles of Amendment designating
en vertu de l'article 26 de la Loi sur les corporations commerciales de la façon indiquée dans les statuts de
a series of shares;
modification ci-jointes décrivant les actions d'une série;
- (c) under Section 117 of the Business Corporations Act as set out in the attached Articles of Amendment, or
en vertu de l'article 117 de la Loi sur les corporations commerciales de la façon indiquée dans les statuts de
modification ci-jointes; ou
- (d) under Section 132 of the Business Corporations Act as set out in the attached Articles of Reorganization,
en vertu de l'article 132 de la Loi sur les corporations commerciales de la façon indiquées dans les statuts
de réorganisation.

Director
Directeur 

Date of Amendment
Date de modification May 26, 2005

**NEW BRUNSWICK
BUSINESS CORPORATIONS ACT
FORM 3
ARTICLES OF AMENDMENT
(SECTION 26, 116)**

**NOUVEAU-BRUNSWICK
LOI SUR LES CORPORATIONS COMMERCIALES
FORMULE 3
STATUTS DE MODIFICATION
(ARTICLE 26,116)**

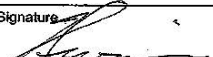
1-Name of Corporation - Raison sociale de la corporation GSI LUMONICS INC.	2-Corporation No.-Numéro de la corporation 508971
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3-The articles of the above-mentioned corporation are amended as follows:

Les statuts de la corporation mentionnée ici sont modifiés comme suit :

To amend Section 1 of the Articles of Incorporation of the Corporation to change the name of the Corporation from GSI Lumonics Inc. to GSI Group Inc.

NOT A
ORIGINAL COPY - TD

Date May 26, 2005	Signature 	Description of Office - Description du bureau CHIEF FINANCIAL OFFICER
FOR DEPARTMENTAL USE ONLY RÉSERVÉ AU SEUL USAGE DU MINISTÈRE		Filed -Déposé FILED/DEPOSE MAY 26 2005

DESCRIPTION OF COMMON SHARES

Novanta Inc. (the “Company,” “we,” or “our”) has one class of securities, our common shares, registered under Section 12 of the Securities Exchange Act of 1934, as amended.

General

We have authority to issue an unlimited number of common shares, no par value. In addition, we have authority to issue up to 7.0 million preferred shares. Our Board of Directors may designate and issue one or more series of preferred shares in order to raise additional capital, provided that no shares of any series may be entitled to more than one vote per share.

Terms

Each outstanding common share is entitled to one vote at all meetings of our shareholders, to participate ratably in any dividends that may be declared by the board of directors and, in the event of liquidation, dissolution or winding-up or other distribution of our assets or property, to a pro rata share of our assets after payment of all our liabilities and obligations. We have never declared or paid cash dividends on our common shares. We currently do not anticipate paying any cash dividends in the foreseeable future.

Shareholders have cumulative voting rights in the election of directors. Cumulative voting rights permit each shareholder entitled to vote at a meeting of shareholders called for the election of directors to cast a number of votes equal to the number of shares held by the shareholder multiplied by the number of directors to be elected. The shareholder is entitled to cast all such votes in favor of one candidate for director or distribute them among the candidates in any manner.

The common shares are not liable to any calls or assessments and are not convertible into any other securities. There are no redemption or sinking fund provisions applicable to the common shares, and there are no preemptive rights held by holders of the common shares.

All outstanding common shares are fully paid and nonassessable.

Anti-Takeover Considerations

Our Articles, By-laws and New Brunswick law contain provisions that may enable our board of directors to resist a change in control of our company. These provisions include:

- the ability to issue an unlimited number of common shares; and
- a limitation that stipulates that only holders of not less than 10 percent of the issued and outstanding shares of the Company carrying the right to vote at a meeting of shareholders are authorized to call a special meeting of shareholders.

These anti-takeover defenses could discourage, delay or prevent a transaction involving a change in control of our company. These provisions could also discourage proxy contests and make it more difficult for shareholders to elect directors of their choosing or cause us to take other corporate actions that shareholders desire.

Canadian Law Matters

There is no limitation imposed by Canadian law or by our Articles on the right of a non-resident to hold or vote common shares, other than as provided in the Investment Canada Act (the “ICA”). Unless a transaction falls within an available exemption, the ICA requires a non-Canadian making an investment that would result in the acquisition of control of a Canadian business or an investment to establish a new Canadian business, to identify, notify, or (if the value of the assets of the target Canadian business exceed a certain monetary threshold) file an application for review with the Investment Review Division of Industry Canada (“IRD”). The monetary threshold that will trigger an application for review varies depending on the status of the foreign investor (e.g., World Trade Organization (“WTO”) member state or non-WTO member state), and whether the business activity is related to Canada’s cultural heritage and national identity (for this type of business activity, the threshold is significantly lower, and the application for review is considered by Heritage Canada).

The notification procedure involves a brief statement of information about the investment on a prescribed form which is required to be filed with the IRD by the investor at any time up to 30 days following implementation of the investment. It is intended that investments requiring only notification will proceed without government intervention unless the investment is in a specific type of business activity related to Canada’s cultural heritage and national identity, in which case the government may initiate further review with notice to the investor within 21 days following the receipt of a certified complete notification. Similarly, if the transaction is considered to be an investment that could be injurious to Canadian national security, it may also be referred by the Minister of Industry (“Minister”) (the Minister responsible for Investment Canada) for further review.

If an investment is reviewable under the ICA, an application for review in the form prescribed is normally required to be filed with the IRD prior to the investment taking place and the investment may not be implemented until the review has been completed and the Minister is satisfied that the investment is likely to be of net benefit to Canada (and, if applicable, is satisfied that the investment would not be injurious to Canadian national security). The Minister has up to 75 days to make this determination, though this period can be extended by agreement between the IRD and the investor (a national security review can take up to 130 days). If the Minister is not satisfied that the investment is likely to be of net benefit to Canada, the non-Canadian must not implement the investment or, if the investment has been implemented, may be required to divest himself of control of the business that is the subject of the investment. If the Governor in Council considers that it is advisable to protect national security, she may prohibit the investment, authorize it to proceed on conditions, or require divestiture.

Transfer Agent

The registrar and transfer agent for our common shares is Computershare Investor Services Inc.

Listing

Our common shares are listed on the Nasdaq Global Select Market under the symbol “NOVT.”

NOVANTA INC.

Non-Employee Director Compensation Policy

As amended and restated effective as of February 25, 2023

Non-employee members of the board of directors (the “**Board**”) of Novanta Inc. (the “**Company**”) shall be eligible to receive cash and equity compensation as set forth in this Non-Employee Director Compensation Policy (this “**Policy**”). The cash and equity compensation described in this Policy shall be paid or be made, as applicable, automatically and without further action of the Board, to each member of the Board who is not an employee of the Company or any parent or subsidiary of the Company (each, a “**Non-Employee Director**”), unless such Non-Employee Director declines the receipt of such cash or equity compensation by written notice to the Company. This Policy was amended and restated on February 25, 2023 and shall remain in effect until it is revised or rescinded by further action of the Board. This Policy may be amended, modified or terminated by the Board at any time in its sole discretion. The terms and conditions of this Policy shall supersede any prior cash and/or equity compensation arrangements for service as a member of the Board between the Company and any of its Non-Employee Directors and between any subsidiary of the Company and any of its non-employee directors.

1. Annual Retainers

- (a) Annual Retainers. Each Non-Employee Director shall receive an annual cash retainer of \$67,500 for service on the Board. The annual retainers described in this Section 1(a) shall be earned on a quarterly basis based on a calendar quarter and shall be paid by the Company in advance on the first business day of each calendar quarter. In the event a Non-Employee Director does not serve as a Non-Employee Director, or in the applicable positions described in Section 1(b), for an entire calendar quarter, such Non-Employee Director shall receive a prorated portion of the retainer otherwise payable to such Non-Employee Director for such calendar quarter pursuant to Section 1(a) and a prorated portion of the Cash Retainer (as defined below) otherwise payable to such Non-Employee Director for such calendar quarter pursuant to Section 1(b), with such prorated portion determined by multiplying such otherwise payable retainer(s) by a fraction, the numerator of which is the number of days remaining in the applicable calendar quarter determined as of the date the Non-Employee Director commences services as a Non-Employee Director or in the applicable positions described in Section 1(b), as the case may be, and the denominator of which is the total number of days in the applicable calendar quarter.
- (b) Additional Annual Retainers. In addition, a Non-Employee Director shall be eligible to receive the following annual retainers, as applicable:
- (i) Board Chair. A Non-Employee Director serving as Chairperson of the Board shall receive an additional annual retainer of \$125,000 for such service.
-

- (ii) Audit Committee Chair. A Non-Employee Director serving as Chairperson of the Audit Committee shall receive an additional annual retainer of \$25,000 for such service.
- (iii) Compensation Committee Chair. A Non-Employee Director serving as Chairperson of the Compensation Committee (unless also serving as the Chairperson of the Board) shall receive an additional annual retainer of \$20,000 for such service.
- (iv) Environmental, Social and Governance Committee Chair. A Non-Employee Director serving as Chairperson of the Environmental, Social and Governance (“ESG”) Committee (unless also serving as the Chairperson of the Board) shall receive an additional annual retainer of \$15,000 for such service.
- (v) Committee Member Compensation. A Non-Employee Director serving as a member of a Board Committee shall receive the following applicable additional annual retainer: \$10,000 annual retainer for Audit Committee service; \$10,000 annual retainer for Compensation Committee service; and \$5,000 annual retainer for ESG Committee service.
- (vi) Lead Director. A Non-Employee Director serving as Lead Director of the Board shall receive an additional annual retainer of \$25,000 for such service.
- (vii) Payment of Additional Annual Chairperson Retainers. The additional annual retainers described in Section 1(b)(i)-(vi) shall be paid 100% in cash (the “**Cash Retainers**”). The Cash Retainers shall be earned on a quarterly basis based on a calendar quarter and shall be paid by the Company in advance on the first business day of each calendar quarter.

2. Annual Equity Compensation Awards

In addition to the annual fees and retainers described in Section 1, each Non-Employee Director shall be granted equity awards as described in this Section 2. The awards described in this Section 2 shall be granted under and shall be subject to the terms and provisions of the Company’s 2010 Incentive Award Plan or any other applicable Company equity incentive plan then-maintained by the Company (such plan, as may be amended from time to time, the “**Equity Plan**”) and shall be granted subject to the execution and delivery of award agreements, including attached exhibits, in substantially the forms previously approved by the Board. All applicable terms of the Equity Plan apply to this Policy as if fully set forth herein, and all equity grants hereunder are subject in all respects to the terms of the Equity Plan.

- (a) Annual Awards. Each Non-Employee Director who serves on the Board as of the first business day of any given calendar year shall be automatically granted, on such date, an equity award that has an aggregate fair value on such date of \$175,000 (as determined in accordance with ASC 718), with 100% of the award granted in the form of restricted stock units (with the number of shares of common stock underlying such award subject to adjustment as provided in the Equity Plan), rounded down to the nearest whole share. The awards described in this Section 2(a) shall be referred to as the “**Annual Awards**.”
 - (b) Initial Awards. Except as otherwise determined by the Board, each Non-Employee Director who is initially elected or appointed to the Board on any date other than the first business day of an applicable calendar year shall be automatically granted, on the date of such Non-Employee Director’s initial election or appointment (such Non-Employee Director’s “**Start Date**”), an equity award that has an aggregate fair value on such Non-Employee Director’s Start Date equal to the product of (i) \$175,000
-

(as determined in accordance with ASC 718) and (ii) a fraction, the numerator of which is 365 minus the number of days in the calendar year preceding such Non-Employee Director's Start Date and the denominator of which is 365, with 100% of the award granted in the form of restricted stock units (with the number of shares of common stock underlying such award subject to adjustment as provided in the Equity Plan), rounded down to the nearest whole share. The awards described in this Section 2(b) shall be referred to as "**Initial Awards**." For the avoidance of doubt, no Non-Employee Director shall be granted more than one Initial Award.

- (c) Termination of Employment of Employee Directors. Members of the Board who are employees of the Company or any parent or subsidiary of the Company who subsequently terminate their employment with the Company and any parent or subsidiary of the Company and remain on the Board will not receive an Initial Award pursuant to Section 2(b) above, but to the extent that they are otherwise eligible, will be eligible to receive, after termination from employment with the Company and any parent or subsidiary of the Company, Annual Awards as described in Section 2(a) above.

3. Vesting of Equity Compensation Awards

Each Annual Award and Initial Award granted in the form of restricted stock units shall be vested (and non-forfeitable) immediately upon the date of grant and shall be settled in common stock on the first anniversary of the date of grant (or if such date is not a business day, the next business day immediately following the first anniversary of the date of grant).

* * * * *

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, LLC.	Florida
Novanta Medical Technologies Corp.	Delaware
ATI Industrial Automation, Inc.	North Carolina
ATI Industrial Mexico, LLC	North Carolina
MGC Industrial, Inc.	North Carolina
Novanta Insurance Company	Arizona
ATI Automation Industrial S de RL de CV.	Mexico
ATI Industrial Automation (Lang Fang) Co., Ltd.	China
Novanta Medical s.r.o.	Czech Republic

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Registration Statements on Form S-8 (Nos. 333-171260, 333-202598, 333-256217) of Novanta Inc. of our report dated March 1, 2023 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, 2023

**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.

Date: March 1, 2023

/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.

Date: March 1, 2023

/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, 2022 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.

Date: March 1, 2023

/s/ Matthijs Glastra

Matthijs Glastra

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**

In connection with the Annual Report of Novanta Inc. (the “Company”) on Form 10-K for the period ended December 31, 2022 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.

Date: March 1, 2023

/s/ Robert J. Buckley

Robert J. Buckley

Chief Financial Officer
