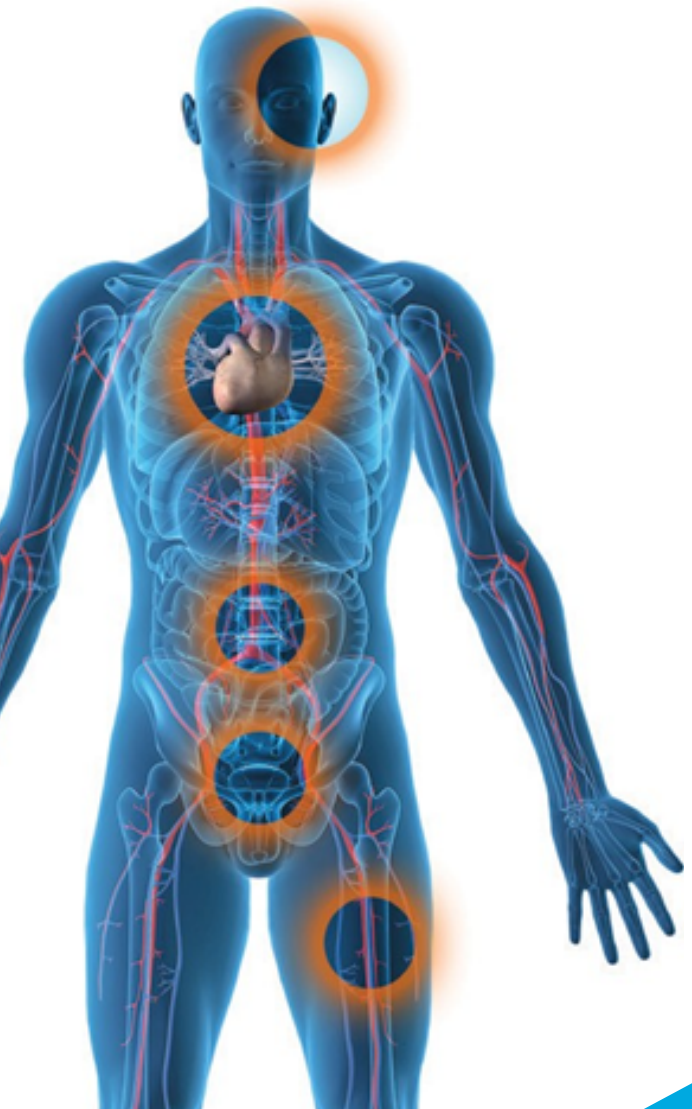
Integer®

2019 Annual Report



Dear fellow stockholders:

I am writing to you during an unprecedented time. As Integer navigates through the turbulent environment created by the COVID-19 pandemic, our top priority remains the health and safety of our team, our families, our customers, and the communities in which we live and work. We are executing our Pandemic plan in response to this crisis, including operating protocols consistent with national and international guidance. Integer is an integral partner to the medical device industry. The mission-critical devices and components that we produce enhance, sustain and save lives. Our customers and local governments are counting on us to remain open to ensure the patients who use the devices we support continue to receive the care they need.

Integer is making tremendous progress on the strategy we launched in 2018. Our *Journey to Excellence* has positioned us to invest through these uncertain times to come out on the other side even stronger. We have transformed our organization with a strong, new leadership team that is aligned around a clear strategy to win in the markets we serve and achieve excellence in all that we do. Through effective execution of our strategy, we have delivered on our commitments for profit growth, margin expansion and deleveraging, while investing in our future.

We are making Manufacturing Excellence a competitive differentiator with the development and implementation of our Integer Production System (IPS). The IPS defines how we operate, ensuring consistency with LEAN as our foundation. We have hired more LEAN experts, trained all our manufacturing leaders, and conducted diagnoses at every site. As a result, we are approaching world-class standards for quality and on-time delivery, and continue to make improvements. During this rapidly evolving situation, these investments will afford us the flexibility to meet changing customer demand in the most efficient manner possible.

Customers are recognizing our overall improved service, relationships and innovation. In turn, we are making significant investments to support their innovation and growth strategies. This includes expanding our manufacturing footprint, investing in new technology and quick turn capabilities at several of our existing plants, and completing bolt-on acquisitions that bring additional manufacturing capability and technology. We are also investing more in Sales, Marketing and R&D, and are confident these investments will yield significant returns.

As we build our Corporate Citizenship program, we are actively establishing activities and actions that demonstrate our commitment to the environment, social and governance (ESG) matters that impact our stakeholders and the communities in which we operate. As we continue to give back to the communities where we live and work, we are doing our part to help those affected by COVID-19 by ramping our production of ventilator and patient monitoring device batteries. We are proud of how our teams around the world have stepped up to continue to take care of our customers and the patients who use their products during these very uncertain times.

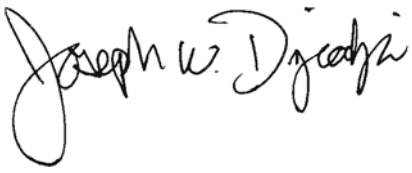
Our strong 2019 financial performance, combined with the successful execution of our manufacturing and performance excellence strategy, has provided Integer with ample liquidity to maintain business continuity for our customers. Our unmatched scale, global presence, world-class manufacturing capabilities and high standards for excellence create a clear competitive advantage. Our associates are passionate about serving our customers who deliver the therapies to the patients whose lives we enhance, and we look forward to strengthening our position as their partner of choice for innovative medical technologies.

It is difficult to know how the COVID-19 pandemic will impact 2020. However, Integer will do everything possible to serve the needs of our customers in order to provide critical medical products to the patients that we serve. Given our size, scale, diverse product portfolio and global presence, we are well positioned and have ample liquidity and flexibility to meet our customers' requirements. We will continue to execute our strategy and invest prudently to grow our business while delivering on our commitments to our employees, our families, our customers and our communities. We believe we will emerge from this pandemic with even stronger associate and customer relationships and be well positioned to grow our market leadership position.

Finally, I would like to take this opportunity to acknowledge and thank Peter Soderberg, who will be retiring after the annual shareholder meeting. Peter has served on the Board of Directors for nearly two decades. His leadership and commitment will be missed.

On behalf of the Board of Directors and management, thank you for your continued interest in Integer. Stay safe and healthy.

Sincerely,



Joseph W. Dziedzic
President & Chief Executive Officer

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

(Mark One)

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

For The Fiscal Year Ended December 31, 2019

or

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

For the transition period from ____ to ____

Commission File Number 1-16137

INTEGER HOLDINGS CORPORATION
(Exact name of Registrant as specified in its charter)

Delaware	**16-1531026**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
5830 Granite Parkway, Suite 1150 Plano, Texas	**75024**
(Address of principal executive offices)	(Zip Code)

(214) 618-5243
(Registrant's telephone number, including area code)

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, Par Value $0.001 Per Share	**ITGR**	**New York Stock Exchange**

Securities Registered Pursuant to Section 12(g) of the Act: None

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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 checkmark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files).

Yes ☒ No ☐

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

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

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

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

The aggregate market value of common stock held by non-affiliates as of June 28, 2019 (the last business day of the registrant's most recently completed second fiscal quarter), based on the last sale price of $83.92, as reported on the New York Stock Exchange on that date: $2.7 billion. Solely for the purpose of this calculation, shares held by directors and officers and 10 percent stockholders of the registrant have been excluded. This exclusion should not be deemed a determination or an admission that these individuals are, in fact, affiliates of the registrant.

Shares of common stock outstanding as of February 14, 2020: 32,805,570

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the following document are specifically incorporated by reference into the indicated parts of this report:

Document	Part
Proxy Statement for the 2020 Annual Meeting of Stockholders	Part III, Item 10 "Directors, Executive Officers and Corporate Governance" Part III, Item 11 "Executive Compensation" Part III, Item 12 "Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters" Part III, Item 13 "Certain Relationships and Related Transactions, and Director Independence" Part III, Item 14 "Principal Accounting Fees and Services"

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PART I

ITEM 1. BUSINESS

OVERVIEW

Integer Holdings Corporation, headquartered in Plano, Texas, is among the world's largest medical device outsource ("MDO") manufacturing companies, serving the cardiac, neuromodulation, orthopedics, vascular, advanced surgical and portable medical markets. We provide innovative, high quality medical technologies that enhance the lives of patients worldwide. In addition to medical technologies, we develop batteries for high-end niche applications in energy, military, and environmental markets. Our brands include Greatbatch Medical®, Lake Region Medical™ and Electrochem™. Our primary customers include large, multi-national original equipment manufacturers ("OEMs") and their affiliated subsidiaries. When used in this report, the terms "Integer," "we," "us," "our" and the "Company" mean Integer Holdings Corporation and its subsidiaries.

We organize our business into two reportable segments, Medical and Non-Medical, and derive our revenues from four principal product lines. The Medical segment includes the Cardio & Vascular, Cardiac Rhythm Management & Neuromodulation ("Cardiac & Neuromodulation") and Advanced Surgical, Orthopedics & Portable Medical product lines and the Non-Medical segment comprises the Electrochem product line.

Our Acquisitions and Divestitures

On October 7, 2019, we purchased certain assets from US BioDesign, LLC ("USB"), a developer and manufacturer of complex braided biomedical structures for disposable and implantable medical devices. The acquisition adds a differentiated capability related to the development and manufacture of complex braided and formed biomedical structures to our broad portfolio, that we believe further positions us as a partner of choice for innovative medical technologies. Refer to Note 2 "Acquisition, Divestiture and Discontinued Operations" of the Notes to Consolidated Financial Statements contained in Item 8 of this report for additional information about the acquisition.

On July 2, 2018, we completed the sale of the Advanced Surgical and Orthopedic product lines (the "AS&O Product Line") to Viant. As a result, we classified the results of operations of the AS&O Product Line as discontinued operations in the Consolidated Statements of Operations for all periods presented and classified the related assets and liabilities associated with the discontinued operations as held for sale in the Consolidated Balance Sheet as of December 29, 2017. All results and information presented exclude the AS&O Product Line unless otherwise noted. Refer to Note 2 "Acquisition, Divestiture and Discontinued Operations" of the Notes to Consolidated Financial Statements contained in Item 8 of this report for additional information about the divestiture.

On March 14, 2016, we completed the spin-off of a portion of our former QiG segment through a tax-free distribution of all of the shares of our former QiG Group, LLC subsidiary to Integer's stockholders. Integer retained no ownership interest in the newly formed company, Nuvectra Corporation ("Nuvectra").

On October 27, 2015, we completed the acquisition of Lake Region Medical Holdings, Inc. ("LRM"), headquartered in Wilmington, MA, in a cash and stock transaction for a total purchase price including debt assumed of approximately $1.77 billion. LRM was primarily a manufacturer of interventional and diagnostic wire-formed medical devices and components specializing in minimally invasive devices for cardiovascular, endovascular, and neurovascular applications. The acquisition of LRM added scale and diversity to our legacy operations, which has enhanced our opportunities to access customers and customer experience by providing a more comprehensive portfolio of technologies.

MEDICAL SEGMENT

Cardio & Vascular

The Cardio & Vascular product line leverages a global footprint to produce a full range of components, subassemblies, and finished devices used in interventional cardiology, structural heart, heart failure, peripheral vascular, neurovascular, interventional oncology, electrophysiology, vascular access, infusion therapy, hemodialysis, urology, and gastroenterology procedures.

The following are the principal products and services offered by our Cardio & Vascular product line:

Interventional Cardiology. Our interventional cardiology portfolio is focused primarily on the design, development and manufacture of catheter and wire-based technologies intended to diagnose and treat cardiac disease. Key products and capabilities span a full suite of devices including coronary stents, balloon catheters, atherectomy devices, imaging and sensing devices, chronic total occlusion solutions, percutaneous transluminal coronary amgioplasty and access guidewires, introducer sheaths, and vascular closure devices. Core areas of technical expertise include laser-cut hypotubes, catheter shafts (extrusion, filmcast, and reflow), integrated hub assemblies, pad printing, tip shaping, polytetrafluoroethylene (PTFE) coating, complex machining, and sensor integration.

Structural Heart and Heart Failure. Structural heart and heart failure products include those used by cardiologists, echocardiographers, cardiac surgeons, and heart failure specialists to treat diseases or defects of the heart, such as valvular diseases and congenital defects. Integer provides components, subassemblies, and finished devices to these markets leveraging a wide range of technologies and capabilities. These include laser-cut and machined components, complex braided meshes, guidewires, introducer sheaths, steerable sheaths and delivery catheters, and implants used in transcatheter aortic valve replacement, balloon aortic valvuloplasty, transcatheter mitral valve repair and replacement, atrial and defect closure, left ventricular assist, and shunt procedures.

Peripheral Vascular, Neurovascular, and Interventional Oncology. Our peripheral vascular, neurovascular, urology and oncology portfolio is primarily focused on the design, development and manufacture of devices used during the treatment of peripheral artery disease, transcatheter embolization and occlusion, aortic aneurysm repair, and neurovascular stroke prevention. Our broad portfolio of devices, capabilities and technology platforms provides our customers with cost effective, high quality solutions ranging from device components to complex assemblies to finished devices such as regulatory approved guidewires and introducers.

Integer's broad technology and capability portfolio within the peripheral vascular markets enables us to address the full spectrum of devices needed in the diagnoses and treatment of peripheral vascular disease. In the peripheral artery disease markets our technologies are focused on the manufacture and development of interventional guidewires, support catheters, introducers and guiding sheaths, balloon catheters, self-expanding stents and stent grafts as well as embolic protection devices. Our neurovascular technology portfolio encompasses micro guidewires, micro and access catheters, aspiration catheters, stent retrievers, embolization coils, as well as flow diverters. In the interventional oncology market, we offer customers guidewires and microcatheters designed to enable the effective delivery of embolic agents.

***Electrophysiology*.** Electrophysiology products include devices used by electrophysiologists and interventional cardiologists for the treatment of cardiac arrythmias, such as atrial fibrillation. Integer primarily produces devices used for treatment of atrial fibrillation, the most prevalent cardiac arrythmia. These devices include sheaths and needles for transseptal access, diagnostic and mapping catheters to record and map the arrythmia sources, and ablation catheters to create lesions for blocking the arrythmia signals. Integer has the technical capabilities and expertise to provide the full spectrum of products from components to finished devices. Typical components include polyimide tubing, electrode rings, platinum tips and fine wires. Sub-assemblies include electrode ring and wire assemblies, steerable handle assemblies, and spline and basket assemblies. Finished devices include steerable transseptal sheaths, diagnostic catheters and ablation catheters.

Vascular Access, Infusion Therapy and Hemodialysis. Our solutions in these markets are focused on vessel access, treatment and device placement for medication and fluid delivery in patients with severe conditions requiring repeated vessel access. We design and manufacture a wide range of vascular access guidewires, stylets, catheters, valved / non-valved peelable and micro introducers. Our portfolio of market-ready vascular access guidewires and introducers kits enables a range of venous and arterial access applications, including transradial access. Additionally, we support customers with custom introducer sheaths and kit solutions leveraging our deep expertise in thin-wall sheath design, hydrophilic coatings and guidewire manufacturing (including poly-jacketed, mandrel, and nitinol core guidewire constructions).

Non-vascular Markets: Within the Cardio & Vascular group, we also manage non-vascular markets for which we have expertise and a broad offering of products, technologies and capabilities. Those markets include:

Urology. Our main focus is in endourology for which we develop and manufacture finished devices and components for access and interventional devices such as guidewires, ureteral access sheaths, dilation devices, retrieval devices, ureteral stents, biopsy forceps, holmium laser fibers, and endoscopes.

Gastroenterology. Our comprehensive range of technologies and capabilities enable us to support our customers' needs with a broad variety of products such as guidewires, dilatation devices, retrieval devices, snares, wire-formed and polymer stents, stent delivery systems, RF ablation devices, and endoscopes.

Cardiac & Neuromodulation

The Cardiac & Neuromodulation product line offers design, development and manufacturing capabilities for components, sub-assemblies, assemblies, and finished medical device systems. We support a variety of clinical markets, with an emphasis on the following markets:

Cardiac Rhythm Management. The Cardiac Rhythm Management ("CRM") market comprises implanted medical devices ("IMDs"), implanted leads, procedure accessories, as well as external devices that monitor and treat heart rhythm disorders and heart disease. Examples of CRM products include implantable pacemakers, implantable cardioverter defibrillators ("ICDs"), insertable cardiac monitors ("ICMs"), implantable cardiac pacing and defibrillation leads, and heart failure therapies such as ventricular assist devices and cardiac resynchronization devices ("CRT-p" and "CRT-D"). An IMD system generally includes an implantable pulse generator ("IPG") and one or more stimulation leads. An IPG is a battery powered device that produces electrical pulses. A lead then carries this electrical pulse from the IPG to the heart. A lead also senses heart signals and carries the signal from the heart back to the IPG.

Our portfolio of technologies and products include components, sub-assemblies, and assemblies for active IPGs, implanted sensing and stimulation leads, accessories, or external instruments. Our investments in research and development have generated battery and capacitor products and we also have developed and provide feedthrough technology and filtering. We are also a supplier of medical stamped components, and shallow and deep draw casings and assemblies.

Beyond the IPG, Integer's CRM product line provides lead development and manufacturing solutions including expertise in low-polarization specialty-coated electrodes and components, and lead and device accessories such as stylets, guidewires, introducers, epicardial pacing leads and lead adapters.

Neuromodulation. Similar to the CRM market, the Neuromodulation ("Neuro") market comprises IPGs, implanted leads, procedure accessories, and external devices, such as battery chargers, trial stimulators and patient controllers. Examples of Neuro products include implantable spinal cord stimulators for chronic pain, sacral nerve stimulators for incontinence, deep brain stimulators for movement disorders and other IMDs to treat psychiatric disorders, sleep disorders and hearing loss. The Neuro market also includes several new emerging applications, such as implanted bioelectronic devices aimed at treating chronic diseases.

Within the Neuro market we offer IMD component technologies that have been developed to meet the needs of our customers including our Xcellion™ line of lithium-ion rechargeable batteries, QMR® and CFx non-rechargeable batteries, feedthroughs, device enclosures, machined components and lead components and sub-assemblies. Additionally, Integer helps OEMs and other emerging companies with the development and manufacture of complete neuromodulation IMD solutions, including custom IPGs, programmer systems, battery chargers, patient controllers, fully finished lead systems and accessories from initial development through commercial quantities.

Advanced Surgical, Orthopedics & Portable Medical

The Advanced Surgical, Orthopedics & Portable Medical ("AS&O") product line offers a broad range of products and services across the many businesses it serves. This product line includes sales to the acquirer of our AS&O Product Line, Viant. In partnership with customers, AS&O offers advanced development, engineering and program management, which provides us with an in-depth understanding of our customers' market drivers and end-user needs.

The following are the principal products and services offered by our AS&O product line:

Portable Medical. We provide complete mission critical batteries and other power solutions through the combined efforts of innovative research, product development, manufacturing and customer partnerships to advance the way healthcare is powered. Our offerings include state of the art customized rechargeable batteries and chargers and non-rechargeable batteries. We design and develop basic and "smart" chargers and docking stations of varying complexities to safely and reliably maximize the efficiency of the rechargeable batteries. We develop batteries, and the attendant chargers, for patient monitoring, portable defibrillators, and portable ultrasound, X-Ray machines, hearing devices and other devices. We collaborate with our customers on product development opportunities incorporating our power solutions into Class I, II or III medical devices.

Arthroscopic Devices & Components. Our arthroscopic devices and component products include devices used for minimally invasive surgery in the joint space, also referred to as "sports medicine." Our products include shaver blades and burrs, ablation probes, and suture anchors, which are used in procedures such as arthroscopic ACL reconstruction, arthroscopic repair, rotator cuff repair, and hip labrum repair.

Laparoscopic & General Surgery. Our laparoscopic and general surgery products include devices used primarily for minimally invasive procedures in the abdominal space, but may also be used in open or general surgery. Customers of our laparoscopy and general surgery products require energy-based devices and endomechanical devices that are efficient and reliable. Our products include, harmonic scalpels, radio frequency probes, and ophthalmic surgery devices.

Orthopedic. Our orthopedic products include hip and shoulder joint reconstruction implants, plates, screws and spinal devices, as well as instruments and delivery systems used in hip and knee replacement, trauma fixation, extremity and spine surgeries. Orthopedic implants are used in reconstructive surgeries to replace or repair hips, knees and other joints, such as shoulders, ankles and elbows that have deteriorated as a result of disease or injury. Trauma implant systems are used primarily to reattach or stabilize damaged bone or tissue while the body heals. Spinal implant systems are used by orthopedic surgeons and neurosurgeons in the treatment of degenerative diseases, deformities and injuries in various regions of the spine.

Each implant system typically has an associated instrument set that is used specifically in the surgical implant procedure. Instruments included in a set vary by implant system. Orthopedic trays have generally been designed to allow for sterilization and re-use after an implant or other surgical procedure is performed. Recently, the industry trend is moving towards single use instrumentation. Cases are used to store, transport and arrange implant systems and other medical devices and related surgical instruments. The majority of cases are tailored for a specific implant procedure so that the instruments, implants, and other devices are arranged to match the order of use in the procedure and are securely held in clearly labeled, custom-formed pockets or brackets.

NON-MEDICAL SEGMENT

Our power solutions enable the success and advancement of our customers' critical non-medical applications. We provide custom battery packs to the energy, military and environmental markets for use in extreme environments where failure is not an option.

The following are the principal products and services offered by our Non-Medical product line:

Electrochem. Electrochem provides customized battery power and management systems, charging and docking stations, and power supplies to markets where safety, reliability, quality and durability are critical. We design customized primary (non-rechargeable) and secondary (rechargeable) battery solutions, which are used in the energy, military and environmental markets.

Electrochem's primary lithium power solutions, which include high, moderate and low rate non-rechargeable cell solutions, are utilized in extreme conditions and can withstand exceptionally high and low temperatures, and high shock and vibration. Electrochem's product design capability includes protective circuitry, glass-to-metal hermetic seals, fuses and diodes to help ensure safe, durable and reliable power as devices using our battery solutions are subjected to harsh conditions. Our primary batteries are often used in remote and demanding environments, including down hole drilling tools, military devices, and oceanographic buoys.

In addition to primary power solutions, Electrochem offers customized secondary or rechargeable battery packs, in a diverse range of chemistries for critical applications requiring rechargeable solutions.

OTHER FACTORS IMPACTING OUR OPERATIONS

Customers

Our products are designed to provide reliable, long-lasting solutions that meet the evolving requirements and needs of our customers. The nature and extent of our commercial relationships with each of our customers are different in terms of breadth of products purchased, purchased product volumes, length of contractual commitment, ordering patterns, inventory management, and selling prices. Contracts with customers can include rebates and tiered pricing arrangements based on pre-determined volume levels, in which higher volume levels typically have lower pricing, or fixed annual price downs that are offered to customers in exchange for increased volume levels and/or longer contract terms. Typically, our contracts specify minimum order quantities and lead times. Revenue from contracts with customers is recognized based upon the transaction price and when performance obligations are satisfied and the customer has obtained control of the products, which typically occurs when title and risk of loss ownership transfers to the customer, primarily determined by shipping terms. The transaction price is determined based on the unit price and the number of units ordered, less any rebates or other price concessions expected to be earned on those units, and is allocated to each performance obligation on a relative standalone selling price basis.

Visibility into our customers' future purchases is over a relatively short period of time. Our customers may have inventory management programs, vertical integration plans and/or alternate supply arrangements that may not be communicated to or shared with us. Additionally, the relative market share among the OEM manufacturers changes periodically. Consequently, these and other factors can significantly impact our sales in any given period. Our customers may initiate field actions with respect to market-released products. These actions may include product recalls or communications with a significant number of physicians about a product or labeling issue. The scope of such actions can range from very minor issues affecting a small number of units to more significant actions. There are a number of factors, both short-term and long-term, related to these field actions that may impact our results. In the short-term, if a product has to be replaced, or customer inventory levels have to be restored, demand will increase. Also, changing customer order patterns due to market share shifts or accelerated device replacements may also have a positive or negative impact on our sales results in the near-term. These same factors may have longer-term implications as well. Customer inventory levels may ultimately have to be rebalanced to match new demand.

Our Medical customers include large multi-national medical device OEMs and their subsidiaries such as Abbott Laboratories, Biotronik, Boehringer Ingelheim, Boston Scientific, Cardinal Health, Johnson & Johnson, LivaNova, Medtronic, Nevro Corp., Philips Healthcare, Smith & Nephew, Stryker, Viant and Zimmer Biomet. Our Non-Medical customers include large multi-national OEMs and their subsidiaries serving the energy, military and environmental services markets such as Baker Hughes, Halliburton, Weatherford International and Teledyne Technologies. During 2019, sales to Abbott Laboratories, Medtronic and Boston Scientific were each in excess of 10% of total sales and collectively accounted for 50% of our total sales. We believe that the diversification of our sales among the various subsidiaries and market segments with those three customers reduces our exposure to negative developments with any one customer. The loss of a significant amount of business from any large customer or a further consolidation of such customers could have a material adverse effect on our financial condition and results of operations, as further explained in Item 1A "Risk Factors" of this report.

Sales and Marketing

We sell our products directly to our customers. In 2019, approximately 56% of our products were sold in the U.S. Sales within and outside the U.S. are primarily to customers whose corporate offices are located and headquartered in the U.S. Information regarding our sales by geographic area is set forth in Note 18 "Segment and Geographic Information" of the Notes to Consolidated Financial Statements contained in Item 8 of this report.

Although the majority of our customers contract with us to develop custom components and assemblies to fit their product specifications, we also provide system and device solutions ready for market distribution by OEMs. We have established close working relationships between our internal program managers and our customers. We market our products and technologies at industry meetings and trade shows domestically and internationally. We have placed additional emphasis on reaching long-term agreements with our OEM customers in order to secure our revenue base and incentivize growth.

Internal account executives support all sales activity and involve engineers and technology professionals in the sales process to address customer requests across all product lines. For system and device solutions, we partner with our customers' research, marketing, and clinical groups to jointly develop technology platforms in alignment with their product roadmaps and therapy needs.

We leverage our account executives with support from our engineers to design and sell product solutions into our targeted markets. Our account executives are trained to assist our customers in selecting appropriate materials and configurations. We market our products and services through well-defined selling strategies and marketing campaigns that are customized for each of the industries we target.

Firm backlog orders at December 31, 2019 were approximately $308 million. The majority of the orders outstanding at December 31, 2019 are expected to be shipped within one year.

Competition

The MDO manufacturing industry has traditionally been highly fragmented with several thousand companies, many of which we believe have limited manufacturing capabilities and limited sales and marketing expertise. We believe that very few companies offer the scope of manufacturing capabilities and services that we provide to medical device companies, however, we may compete in the future against other companies that provide broad manufacturing capabilities and related services. We compete against different companies depending on the type of product or service offered or the geographic area served. We also face competition from existing and prospective customers that employ in-house capabilities to produce some of the products we provide.

Our existing or potential competitors include suppliers with different subsets of our manufacturing capabilities, suppliers that concentrate in niche markets, and suppliers that have, are developing, or may in the future develop, broad manufacturing capabilities and related services. We compete for new business at all phases of the product life cycle, which includes development of new products, the redesign of existing products and transfer of mature product lines to outsourced manufacturers. Competitive advantage is generally based on reputation, quality, delivery, responsiveness, breadth of capabilities, including design and engineering support, price, customer relationships and increasingly the ability to provide complete supply chain solutions rather than only producing and providing individual components.

Many of our customers also have the capability to manufacture similar products, in house, to those that we currently supply to them.

Acquisitions and Investments

One facet of our growth strategy is to acquire additional technology or manufacturing capability to expand our product offering in our key existing growth markets. We expect to continue to engage in business development activities and technology licensing arrangements to support our growth in these markets.

As our customers grow and consolidate, they seek suppliers who can offer broad product capabilities, manufacturing scale and facilitate speed to market. Our strategy aligns with enhancing our portfolio from both organic and inorganic means to partner more broadly with our customers to support their growth. Our inorganic strategy will be primarily focused on smaller strategic "bolt-on" acquisitions that will supplement our existing product portfolio.

Research and Product Development

Our position as a leading developer and manufacturer of medical devices and components is largely the result of our long history of technological innovation. Our scientists, engineers and technicians focus on developing new products, improving and enhancing existing products, and expanding the use of our products in new or tangential applications. In addition to our internal technology and capability development efforts aimed at providing our customers with differentiated solutions, we also engage outside research institutions for unique technology projects.

Medical. We believe our core business is well positioned because our OEM customers leverage our portfolio of intellectual property. We continue to build a healthy pipeline of diverse medical technology opportunities and provide a new level of industry leading capabilities and services to our OEM customers across the full range of medical device products and services continuum. We are at the forefront of innovating technologies and products that help change the face of healthcare, enabling us to provide our customers with a distinct advantage as they bring complete medical systems and solutions to market. In turn, our customers are able to accelerate patient access to life enhancing therapies. We offer our customers a comprehensive portfolio comprising the best technologies, providing a single point of support, and driving optimal outcomes.

Some of the more significant product development opportunities our Medical segment is pursuing are as follows:

Product Line	Product Development Projects
Cardio & Vascular	Active projects in structural heart delivery systems, structural heart delivery accessories, structural heart implants, electrophysiology catheters and subassemblies, neurovascular therapies to prevent hemorrhagic, neurovascular therapies to treat ischemic stroke, enhanced access introducers, gastrointestinal scope components, fractional flow reserve ("FFR") guidewire subassemblies, sensor-enabled catheters and guidewires, and oncology catheters. Technology investments to enable our customer's catheter, delivery system, introducer, guidewire, and implant development programs in our core Cardio & Vascular markets.
Cardiac & Neuromodulation	Active projects to develop next generation technology programs for our batteries, filtered feedthroughs, high voltage capacitors and lead solutions that reduce the size and cost, while increasing performance, for cardiac and neuromodulation devices.

Non-Medical. Some of the more significant product development opportunities our Non-Medical segment is pursuing include developing the next generation medium-rate and high rate batteries, as well as products with extended performance such as higher power pulsing capabilities and increased operating temperature range.

Patents and Proprietary Technology

Our policy is to protect our intellectual property rights related to our technologies and products, and we rely on a combination of patents, licenses, trade secrets and know-how to establish and protect our rights. Where appropriate, we apply for U.S. and foreign patents. We also are a party to license agreements with third parties under which we have obtained, on varying terms, exclusive or non-exclusive rights to patents held by them. In the aggregate, these intellectual property assets and licenses are of material importance to our business; however, we believe that no single patent, technology, trademark, intellectual property asset or license is material in relation to any segment of our business or to our business as a whole. As of December 31, 2019, we owned 617 U.S. and foreign patents and held licenses to an additional 288 U.S. and foreign patents.

Design, development and regulatory aspects of our business also provide competitive advantages, and we require our employees, consultants and other parties having access to our confidential information to execute confidentiality agreements. These agreements prohibit disclosure of confidential information to third parties, except in specified circumstances. In the case of employees and consultants, the agreements generally provide that all confidential information relating to our business is the exclusive property of Integer.

Manufacturing and Quality Assurance

We leverage our strength as an innovative designer and manufacturer of finished devices and components to the medical device industry. Our manufacturing and engineering services include: design, testing, component assembly and production, and device assembly. We have integrated our proprietary technologies in our own products and those of our customers. Our flexible, high productivity manufacturing capabilities span sites across the United States, Mexico, Uruguay, Ireland, and Malaysia.

Due to the highly regulated nature of the products we produce, we have implemented strong quality systems across all sites. The quality systems at our sites are compliant with and certified to various recognized international standards, requirements, and directives. Each site's quality system is certified under an applicable International Organization for Standardization ("ISO") quality system standard, such as ISO 13485 or ISO 9001. This certification requires, among other things, an implemented quality system that applies (where applicable) to the design and manufacture of components, assemblies and finished medical devices, including component quality and supplier control. Maintenance of these certifications for each facility requires periodic re-examination from an independent notified body.

Along with ISO 13485, the facilities producing finished medical devices are subject to oversight by Notified Bodies and extensive and rigorous regulation by numerous government bodies, including the U.S. Food and Drug Administration ("FDA") and other international regulatory agencies and, in order to assure the conformance of devices and components of a worldwide basis. For these facilities, we maintain FDA registration and compliance with all applicable domestic and international regulations. Compliance with applicable regulatory requirements is subject to continual review and is monitored through periodic inspections by the FDA and other international regulatory bodies.

Suppliers and Raw Materials

We purchase critical raw materials from a limited number of suppliers due to the technically challenging requirements of the supplied product and/or the lengthy process required to qualify these materials both internally and with our customers. We cannot quickly establish additional or replacement suppliers for these materials because of these rigid requirements. For these critical raw materials, we maintain minimum safety stock levels and partner with suppliers through contract to help ensure the continuity of supply. Historically, we have not experienced any significant interruptions or delays in obtaining critical raw materials.

Many of the raw materials that are used in our products are subject to fluctuations in market price. In particular, the prices of stainless steel, titanium and precious metals, such as platinum, have historically fluctuated, and the prices that we pay for these materials, and, in some cases, their availability, are dependent upon general market conditions. In most cases, we have pass-through pricing arrangements with our customers that purchase components containing precious metals or have established firm-pricing agreements with our suppliers that are designed to minimize our exposure to market fluctuations.

For non-critical raw material purchases, we utilize competitive pricing methods such as bulk purchases, precious metal pool buys, blanket orders, and long-term contracts to secure supply. We believe that there are alternative suppliers or substitute products available at competitive prices for all of these non-critical raw materials.

As discussed more fully in Item 1A "Risk Factors" of this report, our business depends on a continuous supply of raw materials from a limited number of suppliers. If an unforeseen interruption of supply were to occur, we may be unable to obtain substitute sources for these raw materials on a timely basis, on terms acceptable to us or at all, which could harm our ability to manufacture our products profitably or on time. Additionally, we may be unable to quickly establish additional or replacement suppliers for these materials as there are a limited number of worldwide suppliers.

Working Capital Practices

Our goal is to carry sufficient levels of inventory to ensure that we have adequate supply of raw materials from suppliers and meet the product delivery needs of our customers. We also provide payment terms to customers in the normal course of business and rights to return product under warranty to meet the operational demands of our customers. It will continue to be a priority for us to maintain appropriate working capital levels while improving our operating cash flow and pay down outstanding debt.

Government Regulation

Medical Device Regulation

The development, manufacture and sale of our products is subject to regulation by numerous agencies and legislative bodies, including the FDA and comparable foreign counterparts. In the U.S., these regulations were enacted under the Medical Device Amendments of 1976 to the Federal Food, Drug and Cosmetic Act and its subsequent amendments, and the regulations issued or proposed thereunder. These regulatory requirements subject our products and our business to numerous risks that are specifically discussed within "Risks Related to Our Industries" under Item 1A "Risk Factors" of this report. A summary of critical aspects of our regulatory environment is included below.

The FDA's Quality System Regulations set forth requirements for our product design and manufacturing processes, require the maintenance of certain records, and provide for on-site inspection of our facilities and continuing review by the FDA. Authorization to commercially market our non-exempt products in the U.S. is granted by the FDA under procedures referred to as 510(k) pre-market notification or pre-market approval ("PMA"). These processes require us to notify the FDA of the new product and obtain FDA clearance or approval before marketing the device.

The FDA classifies medical devices based on the risks associated with the device. Devices are classified into one of three categories - Class I, Class II, or Class III. Class I devices are deemed to be low risk and are therefore subject to the least regulatory controls. Class II devices are higher risk devices than Class I and require greater regulatory controls, generally a 510(k) pre-market notification, to provide reasonable assurance of the device's safety and effectiveness as well as substantial equivalence to a previously cleared device, as demonstrated by data. Class III devices are generally the highest risk devices and are therefore subject to the highest level of regulatory control, requiring a PMA by the FDA before they are marketed.

We market our products in numerous foreign countries and therefore are subject to regulations affecting, among other things, product standards, sterilization, packaging requirements, labeling requirements, import laws and onsite inspection by independent bodies with the authority to issue or not issue certifications we may require to be able to sell products in certain countries. Many of the regulations applicable to our devices and products in these countries are similar to those of the FDA. The member countries of the European Union ("EU") have adopted the European Medical Device Directives, which create a single set of medical device regulations for all member countries. The European Medical Device Directives is being replaced by the European Medical Device Regulation that goes into effect in May 2020. These regulations require companies that wish to manufacture and distribute medical devices in the EU to maintain quality system certifications through EU recognized Notified Bodies. These Notified Bodies authorize the use of the CE Mark, which allows for free movement of our products throughout the member countries. Requirements pertaining to our products vary widely from country to country, ranging from simple product registrations to detailed submissions such as those required by the FDA.

In the U.S., our introducer, guidewire, and delivery catheter products are considered Class II devices and generally the 510(k) process applies. Orthopedic instruments are considered Class I exempt, while pacing leads are subject to the Class III PMA process. In Europe, these devices are considered either Class I, Class IIa, Class III, or AIMD, under European Medical Device Directives. These directives require, and the European Medical Device Regulation that goes into effect in May 2020 will require, companies that wish to manufacture and distribute medical devices in EU member countries to obtain a CE Mark for those products, which indicate that the products meet minimum standards of performance, essential requirements, safety conformity assessment and quality.

We believe that the procedures we use for quality controls, development, testing, manufacturing, labeling, marketing and distribution of our medical devices conform to the requirements of all pertinent regulations.

Environmental Health and Safety Laws

We are subject to direct governmental regulation, including the laws and regulations generally applicable to all businesses in the jurisdictions in which we operate. We are subject to federal, state and local environmental laws and regulations governing the emission, discharge, use, storage and disposal of hazardous materials and the remediation of contamination associated with the release of these materials at our facilities and at off-site disposal locations. Our manufacturing and RD&E activities may involve the controlled use of small amounts of hazardous materials. Liabilities associated with hazardous material releases arise principally under the Federal Comprehensive Environmental Response, Compensation and Liability Act and analogous state laws that impose strict, joint and several liability on owners and operators of contaminated facilities and parties that arrange for the off-site disposal of hazardous materials. We are not aware of any material noncompliance with the environmental laws currently applicable to our business and we are not subject to any material claim for liability with respect to contamination at any of our facilities or any off-site location. We may, however, become subject to these environmental liabilities in the future as a result of our historic or current operations.

Conflict Minerals and Supply Chain

We are subject to Securities and Exchange Commission ("SEC") rules adopted pursuant to the Dodd-Frank Wall Street Reform and Consumer Protection Act concerning "conflict minerals" (generally tin, tantalum, tungsten and gold) and similar rules are being implemented by the EU. Certain of these conflict minerals are used in the manufacture of our products. These rules require us to investigate the source of any conflict minerals necessary to the production or functionality of our products. If any such conflict minerals originated in the Democratic Republic of the Congo or adjoining countries (the "DRC region"), we must undertake due diligence efforts to determine whether such minerals financed or benefited armed groups in the DRC region. Since our supply chain is complex, our ongoing compliance with these rules could affect the pricing, sourcing and availability of conflict minerals used in the manufacture of our products.

We are also subject to disclosure requirements regarding abusive labor practices in portions of our supply chain under the California Transparency in Supply Chains Act and the UK Modern Slavery Act.

Other Laws and Regulations

Our sales and marketing practices are subject to regulation by the U.S. Department of Health and Human Services pursuant to federal anti-kickback laws, and are also subject to similar state laws.

Employees

As of December 31, 2019, we employed approximately 8,250 persons, of whom approximately 3,750 are located in the U.S., 2,600 are located in Mexico, 1,350 are located in Europe, 300 are located in South America, and 250 are located in Asia. We also employ approximately 150 temporary employees worldwide to assist us with various projects and service functions and address peaks in staff requirements. We believe that we have a good relationship with our employees.

Seasonality

Our business is generally not seasonal in nature. However, since our customers are large OEM businesses, our sales are influenced by the inventory levels they carry, which can cause shifts in our sales volume as their inventories fluctuate.

Available Information

Our Internet address is www.integer.net. We also make available free of charge through our website our annual report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act as soon as reasonably practicable after we electronically file those reports with, or furnish them to, the SEC. The information contained on our website is not incorporated by reference in this annual report on Form 10-K and should not be considered a part of this report. The SEC maintains a website that contains reports, proxy and information statements, and other information regarding issuers, including the Company, that file electronically with the SEC. The public can obtain any documents that we file with the SEC at www.sec.gov.

INFORMATION ABOUT OUR EXECUTIVE OFFICERS

Information concerning our executive officers is presented below as of February 20, 2020. The officers' terms of office run from year to year until the first meeting of the Board of Directors occurring immediately following our Annual Meeting of Stockholders, and until their successors are elected and qualified, except in the case of earlier death, retirement, resignation or removal.

Joseph W. Dziedzic, age 51, is President and Chief Executive Officer of the Company and a member of our Board of Directors. He assumed that role on July 16, 2017 following his appointment as interim President & Chief Executive Officer on March 27, 2017. Mr. Dziedzic was the Executive Vice President and Chief Financial Officer of The Brink's Company from 2009 to 2016, and prior to joining The Brink's Company in 2009, he had a 20-year career with General Electric.

Jason K. Garland, age 46, is the Company's Executive Vice President and Chief Financial Officer. Mr. Garland had served as Divisional Vice President & Chief Financial Officer, Global Sales, for Tiffany & Co. from October 2017 until joining the Company in October 2018, and had served as Divisional Vice President & Chief Financial Officer, Diamond & Jewelry Supply, for Tiffany & Co. from July 2015 to October 2017. From 1995 to 2015, Mr. Garland served in various financial and operational roles at General Electric, including as Chief Financial Officer, GE Industrial Solutions, from March 2010 to June 2015.

Joel Becker, age 52, is President, CRM & Neuromodulation, and joined the Company in April 2019. Mr. Becker is also the leader for the Sales Force Excellence strategic imperative. Prior to joining the Company, he was the President of Viking North Ventures from October 2016 to April 2019 and served as the Chief Executive Officer of XchangeLabs LLC from August 2017 to August 2018. Prior to those positions, Mr. Becker had a nearly 20-year career with St. Jude Medical where he held a variety of different roles including President, Americas Division from July 2013 to February 2016, and President, United States Division from October 2011 to July 2013.

Jennifer M. Bolt, age 51, is Senior Vice President, Global Operations, and has served in that position since April 2019. In November 2017, Ms. Bolt assumed leadership of the Portable Medical product line, and in February 2018, she assumed leadership for the Integer Manufacturing Excellence strategic imperative. From October 2015 to April 2019, Ms. Bolt served as President, Electrochem. From June 2013 to October 2015, she was Vice President, Supply Chain and Operational Excellence for Greatbatch. Ms. Bolt held the position of Vice President, Operations for Electrochem from May 2012 to June 2013, and prior to that served as Director of Operations of our Raynham, MA facility from September 2007 to May 2012. Ms. Bolt joined our Company in May 2005 as the Manufacturing Engineering Manager for our Alden, New York facility. Prior to joining our Company, she served in a variety of engineering and operational roles at General Motors/Delphi and Eastman Kodak.

Anthony Borowicz, age 63, is Senior Vice President, Strategy, Corporate Development & Investor Relations and joined the Company in April 2002 and has served in various leadership roles including Vice President, Business Development from December 2014 to December 2018 and Executive Director, Business Development from July 2013 to December 2014. Mr. Borowicz had served as the Vice President, Finance for Kendall Healthcare from April 2001 until joining the Company. Previously, he was the Vice President & Chief Financial Officer for Graphic Controls Corporation from January 1995 to April 2001.

Joseph Flanagan, age 61, is Executive Vice President for Quality and Regulatory Affairs, a position he has held since October 2015. In February 2018, he assumed leadership for the Integer Business Process Excellence strategic imperative. From January 2012 until the Company's acquisition of Lake Region Medical in October 2015, he was Vice President of Quality and Regulatory Affairs for Lake Region Medical. Prior to joining Lake Region Medical, Mr. Flanagan served as Vice President of Quality and Regulatory Affairs for NP Medical from April 2008 until January 2012.

Elizabeth Giddens, age 49, is Senior Vice President, General Counsel, Chief Ethics and Compliance Officer and Corporate Secretary, and has served in that position since joining the Company in August 2019. Prior to joining the Company, Ms. Giddens was Senior Vice President, Deputy General Counsel and Corporate Secretary at Mr. Cooper Group Inc. (formerly known as Nationstar Mortgage Holdings Inc.) from June 2012 to August 2019. Between 2005 to 2012, she served in a variety of senior legal roles for Quicksilver Resources. She also worked as an attorney in private practice from 1998 to 2005, including at the Jones Day law firm.

Carter Houghton, age 51, is President, Electrochem and Power Solutions. From December 2016 until joining the Company in May 2019, Mr. Houghton was President of the Hospital Business Unit at Haemonetics Corporation. Prior to joining Haemonetics, Mr. Houghton had over an 11-year career with Hologic where he served in various leadership roles including Senior Vice President & General Manager, GYN Surgical Solutions Division from February 2013 to August 2015, and Vice President & General Manager, Interventional Breast Solutions Division from February 2010 to September 2013.

Payman Khales, age 50, is President, Cardio & Vascular, and joined the Company on February 20, 2018. Mr. Khales is also the leader for the Integer Market Focused Innovation strategic imperative. Prior to joining Integer, Mr. Khales was the President of the Environmental Technologies Segment at CECO Environmental Company from May 2014 through July 2017. Previously, he was employed by Ingersoll Rand Company where he held a variety of different roles in the United States and Canada, including Vice President Product Management for the global Power Tools division from January 2012 through April 2014, and Vice President Strategic Accounts & Channels from February 2010 through December 2011.

Kirk Thor, age 56, is Executive Vice President and Chief Human Resources Officer. From 2013 until joining the Company in January 2018, Mr. Thor was Vice President for Global Talent Management & Organization Effectiveness at Flowserve Corporation. From 2007 to 2012, he served as Vice President for Talent Management & Organization Development at JC Penney. In February 2018, he assumed leadership for the Integer Culture strategic imperative.

CAUTIONARY FACTORS THAT MAY AFFECT FUTURE RESULTS

Some of the statements contained in this report and other written and oral statements made from time to time by us and our representatives are not statements of historical or current fact. As such, they are "forward-looking statements" within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended (the "Exchange Act"). We have based these forward-looking statements on our current expectations, and these statements are subject to known and unknown risks, uncertainties and assumptions. Forward-looking statements include statements relating to:

- future development and expected growth of our business and industry;
- our ability to execute our business model and our business strategy;
- having available sufficient cash and borrowing capacity to meet working capital, debt service and capital expenditure requirements for the next twelve months; and
- projected capital spending.

You can identify forward-looking statements by terminology such as "may," "will," "should," "could," "expects," "intends," "plans," "anticipates," "believes," "estimates," "predicts," "potential" or "continue" or "variations" or the negative of these terms or other comparable terminology. These statements are only predictions. Actual events or results may differ materially from those stated or implied by these forward-looking statements. In evaluating these statements and our prospects, you should carefully consider the factors set forth below. All forward-looking statements attributable to us or persons acting on our behalf are expressly qualified in their entirety by these cautionary factors and to others contained throughout this report.

Although it is not possible to create a comprehensive list of all factors that may cause actual results to differ from the results expressed or implied by our forward-looking statements or that may affect our future results, some of these factors include the following:

- our dependence upon a limited number of customers;
- pricing pressures that we face from customers;
- our ability to respond to changes in technology;
- the intense competition we face and our ability to successfully market our products;
- our ability to develop new products and expand into new geographic and product markets;
- our reliance on third party suppliers for raw materials, key products and subcomponents;
- the potential for harm to our reputation caused by quality problems related to our products;
- regulatory issues resulting from products complaints, recalls or regulatory audits;
- the potential of becoming subject to product liability claims;
- our ability to protect our intellectual property and proprietary rights;
- our significant amount of outstanding indebtedness and our ability to remain in compliance with financial and other covenants under our senior secured credit facilities;
- our ability to integrate acquisitions and operate acquired businesses in accordance with expectations;
- our dependence upon our senior management team and technical personnel;
- our ability to realize the benefits from cost savings and consolidation initiatives;
- interruptions in our manufacturing operations;
- our ability to comply with environmental regulations;
- our complex international tax profile;
- our dependence upon our information technology systems and our ability to prevent cyber-attacks and other failures;
- market, financial and other risks related to our international operations and sales;
- global economic factors, including currency exchange rates and interest rates;
- the fact that the healthcare industry is highly regulated and subject to various regulatory changes;
- the dependence of our energy market-related revenues on the conditions in the oil and natural gas industry; and
- other risks and uncertainties that arise from time to time and are described in Item 1A "Risk Factors" of this report.

ITEM 1A. RISK FACTORS

Our business faces many risks, and you should carefully consider the following risk factors, together with all of the other information included in this report, including the financial statements and related notes, when deciding to invest in us. Any of the risks discussed below, or elsewhere in this report or in our other SEC filings, could have a material impact on our business, financial condition or results of operations. Additional risks not currently known to us or that we currently consider immaterial also may materially adversely affect our business, financial condition or results of operations in the future.

Risks Related To Our Business

We depend heavily on a limited number of customers, and if we lose any of them or they reduce their business with us, we would lose a substantial portion of our revenues.

In 2019, our top three customers collectively accounted for approximately 50% of our revenues. These customers may not agree to renew or extend our supply agreements with them. Furthermore, many of our supply agreements do not contain minimum purchase level requirements and therefore there is no guaranteed source of revenue that we can depend upon under these agreements. In addition, we are dependent on the continued growth, viability and financial stability of these customers. The markets in which these customers operate are subject to rapid technological change, vigorous competition and short product life cycles. As a result, when these customers are adversely affected by these factors, we may be similarly adversely affected. The loss of any large customer, a material reduction of business with that customer, or a delay or failure by that customer to make payments due to us, would harm our business, financial condition and results of operations.

We are subject to pricing pressures from customers, which could harm our operating results.

Given the highly competitive industry in which we operate, we have reduced price to some of our customers in recent years and we expect customer pressure for continued price reductions. These price reductions may cause our operating results to suffer.

If we do not respond to changes in technology, our products may become obsolete or less competitive and we may experience a loss of customers and lower revenues.

We sell our products to customers in several industries that are characterized by extensive research and development, rapid technological changes, new product introductions and evolving industry standards. Without the timely introduction of new products, technologies and enhancements, our products and services will likely become technologically obsolete or less competitive over time and we may lose or see a reduction in business from a significant number of our customers. We dedicate a significant amount of effort and resources to the development of our products, technologies and enhancements. Our product development efforts may be affected by a number of factors, including our ability to anticipate customer needs, develop or acquire new technologies and enhancements, secure intellectual property protection for our products, and manufacture products in a cost effective manner. We would be harmed if we did not meet customer requirements and expectations. Our inability, for technological or other reasons, to successfully develop and introduce new and innovative products, technologies and enhancements could result in a loss of customers and lower revenues.

We may face intense competition that could harm our business and we may be unable to compete successfully against new entrants and established companies with greater resources.

Competition in connection with the manufacturing of our medical products across all of our product lines has intensified in recent years and may continue to intensify in the future. We encounter significant competition across our product lines and in each market in which our medical products are sold from various medical device companies, many of which may have greater financial, technical and marketing resources than we do and are more well-established. In addition, one or more of our medical customers may undertake additional vertical integration and/or supplier diversification initiatives and begin to manufacture or dual-source some or all of the components or products that we currently supply to them, which could cause our operating results to suffer. The market for commercial power sources is competitive, fragmented and subject to rapid technological change. Many other commercial power source suppliers are larger than us and have greater financial, operational, personnel, sales, technical and marketing resources and are able to take advantage of greater economies of scale than we can. These and other companies may develop products that are superior, technologically or otherwise, or more cost effective than our products, which could result in lower revenues and operating results.

If we are unable to successfully market our current or future products, our business will be harmed and our revenues and operating results will be adversely affected.

The markets for our products have been changing in recent years. If the markets for our products do not grow as we or industry experts forecast, our revenues could be less than expected. Furthermore, it is difficult to predict the rate at which the markets for our products will grow or if new and increased competition will result in market saturation. Slower growth in the cardiac rhythm, neuromodulation, cardio and vascular, environmental, military or energy markets in particular would adversely impact our revenues. In addition, we face the risk that our products will lose widespread market acceptance. Our customers may not continue to utilize the products we offer and a market may not develop for our future products.

We may at times determine that it is not technically or economically feasible for us to continue to manufacture certain products and we may not be successful in developing or marketing replacement products. Additionally, new technologies that we develop may not be rapidly accepted because of industry-specific factors, including the need for regulatory clearance, entrenched patterns of clinical practice and uncertainty over third party reimbursement. If any of these events occurs, our business will be harmed and our revenues and operating results will be adversely affected.

We intend to develop new products and expand into new geographic and product markets, which may not be successful and could harm our operating results.

We intend to develop new and modified products using our existing technologies and engineering capabilities and expand into new geographic and product markets. These efforts have required and will continue to require us to make substantial investments, including significant RD&E expenditures and capital expenditures for new, expanded or improved manufacturing facilities. Additionally, many of the new products we are developing take longer and more resources to develop and commercialize than those products we are currently marketing, including more time and resources required to obtain regulatory approvals.

Specific risks in connection with expanding into new products and product markets include: longer product development cycles, the inability to transfer our quality standards and technology into new products, the failure to receive or the delay in receipt of regulatory approval for new products or modifications to existing products, and the failure of our existing customers or the market generally to accept the new or modified products. Our inability to develop new products or expand into new geographic and product markets, as currently intended, could hurt our business, financial condition and results of operations.

We rely on third party suppliers for raw materials, key products and subcomponents. Increased prices for, or unavailability of, these materials, products or subcomponents could adversely affect our results of operations.

Our business depends on a continuous supply of raw materials. The principal raw materials used in our business include lithium, iodine, gold, CFx, palladium, stainless steel, aluminum, cobalt chrome, tantalum, platinum, ruthenium, gallium trichloride, vanadium oxide, iridium, titanium and plastics. The supply and price of these raw materials are susceptible to fluctuations due to transportation issues, government regulations, price controls, foreign civil unrest, tariffs, worldwide economic conditions or other unforeseen circumstances. Increasing global demand for these raw materials has caused prices of these materials to increase. Significant increases in the cost of raw materials that cannot be recovered through increases in the prices of our products could adversely affect our results of operations. There can be no assurance that the marketplace will support higher prices or that price increases and productivity gains will fully offset any raw material cost increases in the future. In addition, there are a limited number of worldwide suppliers of several raw materials needed to manufacture our products. For reasons of quality, cost effectiveness or availability, we obtain some raw materials from a single supplier. Although we work closely with our suppliers to seek to ensure continuity of supply, we may not be able to continue to procure raw materials critical to our business at all or to procure them at acceptable price levels. A disruption in deliveries from our suppliers, price increases or decreased availability of raw materials could have an adverse effect on our ability to meet our commitments to our customers and increase our operating costs.

In addition, we rely on third party manufacturers to supply many of the products and subcomponents that are incorporated into our products and components. These third party manufacturers have their own complex supply chains. Manufacturing problems may occur with these and other outside sources, as a supplier may fail to develop or manufacture products and subcomponents for us on a timely basis, or may supply us with products and subcomponents that do not meet our quality, quantity and cost requirements. If any of these problems occur, we may be unable to obtain substitute sources for these products and subcomponents on a timely basis or on terms acceptable to us, which could harm our ability to manufacture our own products and components profitably or on time. In addition, to the extent the processes our suppliers use to manufacture products and subcomponents are proprietary, we may be unable to obtain comparable products and subcomponents from alternative suppliers.

Our business is also subject to risks associated with U.S. and foreign legislation, regulations and trade agreements relating to the materials we import, including the tariffs on steel that the U.S. has imposed and other quotas, duties, tariffs or taxes or restrictions on imports, which could adversely affect our operations and our ability to import materials used in our products at current or increased levels. We cannot predict whether additional U.S. and foreign customs quotas, duties (including antidumping or countervailing duties), tariffs, taxes or other charges or restrictions, requirements as to where raw materials must be purchased or other restrictions on our imports will be imposed in the future or adversely modified, or what effect such actions would have on

our costs of operations. Future quotas, duties or tariffs may adversely affect our business, financial condition, results of operations or cash flows. Future trade agreements could also provide our competitors with an advantage over us, or increase our costs, either of which could adversely affect our business, financial condition, results of operations or cash flows.

Quality problems with our products could harm our reputation and erode our competitive advantage.

Quality is important to us and our customers, and our products, given their intended uses, are held to high quality and performance standards. In the event our products fail to meet these standards, we could be subject to negative publicity and our reputation could be harmed. This could erode our competitive advantage over competitors, causing us to lose or see a material reduction in business from customers and resulting in lower revenues.

Quality problems with our products could result in warranty claims and additional costs.

We generally allow customers to return defective or damaged products for credit, replacement or repair. We generally warrant that our products will meet customer specifications and will be free from defects in materials and workmanship. Additionally, we carry a safety stock of inventory for our customers that may be impacted by warranty claims. We reserve for our exposure to warranty claims based upon recent historical experience and other specific information as it becomes available. However, these reserves may not be adequate to cover future warranty claims. In addition, we might be required to devote significant resources to address any quality issues associated with our products, which could reduce the resources available for product development and other matters. If our reserves for warranty claims are inadequate, additional warranty costs or inventory write-offs may need to be incurred in the future, which could harm our operating results.

Regulatory issues resulting from product complaints, or recalls, or regulatory audits could harm our ability to produce and supply products or bring new products to market.

The products that we design, manufacture and distribute, including our customers' finished medical devices, product components that are incorporated into our customers' finished medical devices, and our own finished medical devices, are designed, manufactured and distributed globally in compliance with applicable regulations and standards. However, a product complaint, recall or negative regulatory audit may cause our products, including product components and finished medical devices, to be removed from the market and harm our operating results or financial condition. In addition, during the period in which corrective action is being taken by us to remedy a complaint, recall or negative audit, regulators may not allow our new products to be cleared for marketing and sale.

If we become subject to product liability claims, our operating results and financial condition could suffer.

Our business exposes us to potential product liability claims, which may take the form of a one-off claim from a single claimant or a class action lawsuit covering multiple claimants. Product failures, including those that arise from the failure to meet product specifications, misuse or malfunction, or design flaws, or the use of our products with other components, systems or medical devices not manufactured or sold by us could result in product liability claims or a recall. Many of our products are components that interact with our customers' medical devices. For example, our batteries are produced to meet electrical performance, longevity and other specifications, but the actual performance of those products is dependent on how they are utilized as part of our customers' devices over the lifetime of their products. Product performance and device interaction from time to time have been, and may in the future be, different than expected for a number of reasons. Consequently, it is possible that customers may experience problems with their medical devices that could require device recall or other corrective action, where our batteries met the specification at delivery, and for reasons that are not related primarily or at all to any failure by our product to perform in accordance with specifications. It is possible that our customers (or end-users) may in the future assert that our products caused or contributed to device failure. Even if these assertions do not lead to product liability or contract claims, they could harm our reputation and our customer relationships. Furthermore, the design and manufacturing of finished medical devices of the types that we also produce entail an inherent risk of product liability claims. Some of the medical devices that we manufacture and sell are designed to be implanted into the human body. A number of factors could result in an unsafe condition or injury to, or death of, a patient with respect to these medical devices. These factors could also result in product liability claims, a recall of one or more of our medical devices or a safety alert relating to one or more of our medical devices.

Provisions contained in our agreements with key customers attempting to limit our damages, including provisions to limit damages to liability for negligence, may not be enforceable in all instances or may otherwise fail to adequately protect us from liability for damages. Product liability claims or product recalls, regardless of their ultimate outcome and whether related to a product component or a finished medical device, could require us to spend significant time and money in litigation and require us to pay significant damages and could divert the attention of our management from our business operations. The occurrence of product liability claims or product recalls could affect our operating results and financial condition.

We carry product liability insurance with coverage that is limited in scope and amount. We may not be able to maintain this insurance at a reasonable cost or on reasonable terms, or at all. This insurance may not be adequate to protect us against product liability claims made against us.

Our operating results may fluctuate, which may make it difficult to forecast our future performance and may result in volatility in our stock price.

Our operating results have fluctuated in the past and are likely to continue to fluctuate from quarter to quarter, making forecasting future performance difficult and resulting in volatility in our stock price. These fluctuations are due to a variety of factors, including the following:

- timing of orders placed by our customers;
- changes in the mix of our revenue represented by our various products and customers could result in reductions in our profits if the mix of our revenue represented by lower margin products increases;
- a portion of our costs are fixed in nature, which results in our operations being particularly sensitive to fluctuations in production volumes; and
- increased costs and decreased availability of raw materials or supplies.

If we are unable to protect our intellectual property and proprietary rights, our business could be harmed.

We rely on a combination of patents, licenses, trade secrets and know-how to establish and protect our rights to our technologies and products. However, these measures afford only limited protection, and our patent rights, whether issued, subject to license or in process, and our other intellectual property protections may be misappropriated, circumvented or invalidated. The laws of some foreign countries do not offer the same level of protection for our intellectual property as the laws of the U.S. Further, no assurances can be given that any patent application we have filed or will file will result in a patent being issued, or that any existing or future patents will afford adequate or meaningful protection against competitors or against similar technologies. In addition, competitors may design around our technology or develop competing technologies that do not infringe our proprietary rights. As patents and other intellectual property protection expire, we may lose our competitive advantage. If third parties infringe or misappropriate our patents or other proprietary rights, our businesses could be seriously harmed.

In addition, we cannot be assured that our existing or planned products do not or will not infringe on the intellectual property rights of others or that others will not claim such infringement. Our industry has experienced extensive ongoing patent litigation which can result in the incurrence of significant legal costs for indeterminate periods of time, injunctions against the manufacture or sale of infringing products and significant royalty payments. At any given time, we may be a plaintiff or defendant in these types of actions. We cannot assure you that we will be able to prevent competitors from challenging our patents or other intellectual property rights or entering markets we currently serve.

In addition to seeking formal patent protection whenever possible, we attempt to protect our proprietary rights and trade secrets by entering into confidentiality agreements with employees, consultants and third parties with which we do business. However, these agreements may be breached and, if a breach occurs, there may be no adequate remedies available to us and we may be unable to prevent the unauthorized disclosure or use of our technical knowledge, practices or procedures. If our trade secrets become known, we may lose our competitive advantages.

We may be subject to intellectual property claims, which could be costly and time consuming and could divert our management's attention from our business operations.

In producing our products, third parties may claim that we are infringing on their intellectual property rights, and we may be found to have infringed on those intellectual property rights. We may be unaware of the intellectual property rights of others that may be used in our technology and products. In addition, third parties may claim that our patents have been improperly granted and may seek to invalidate our existing or future patents. If any claim for invalidation prevailed, third parties may manufacture and sell products that compete with our products and our revenues from any related license agreements would decrease accordingly. Former employers of our associates may assert claims that these associates have improperly disclosed to us the confidential or proprietary information of those former employers. We also typically do not receive significant indemnification from parties that license technology to us against third party claims of intellectual property infringement.

Any litigation or other challenges regarding our patents or other intellectual property, with or without merit, could be costly and time consuming and could divert the attention of our management and key personnel from our business operations. The complexity of the technology involved in producing our products and the uncertainty of intellectual property litigation increases these risks. If we are not successful in defending these claims, we could be required to stop selling, delay shipments of, or redesign our products, discontinue the use of related technologies or designs, pay monetary amounts as damages, and satisfy indemnification obligations that we have with some of our customers. Claims of intellectual property infringement may also require us to enter into costly royalty or license agreements. However, we may not be able to obtain royalty or license agreements on terms acceptable to us, or at all. We also may be made subject to significant damages or injunctions against development and sale of our products.

A failure to comply with customer-driven policies and standards and third-party certification requirements or standards could adversely affect our business and reputation.

Our customers may require us to comply with their own or third-party quality standards, business policies, commercial terms, or other policies or standards, which may be even more restrictive than current laws and regulations as well as our pre-existing policies or terms with our suppliers, before they commence, or continue, doing business with us. These policies or standards may be customer-driven, established by the market sectors in which we operate or imposed by third party organizations.

Our compliance with these heightened or additional policies, standards and third-party certification requirements, and managing a supply chain in accordance with those policies, standards and requirements, could be costly, and our failure to comply could adversely affect our operations, customer relationships, reputation and profitability. In addition, our adoption of these standards could adversely affect our cost competiveness and ability to provide customers with required service levels. In certain circumstances, to meet the requirements or standards of our customers, we may be obligated to select certain suppliers or make other sourcing choices, and we may bear responsibility for adverse outcomes even if these matters are the result of third-party actions or outside of our control.

Our failure to obtain licenses from third parties for new technologies or the loss of these licenses could impair our ability to design and manufacture new products and reduce our revenues.

We occasionally license technologies from third parties rather than depending exclusively on our own proprietary technology and developments. Our ability to license new technologies from third parties is and will continue to be critical to our ability to offer new and improved products. We may not be able to continue to identify new technologies developed by others and even if we are able to identify new technologies, we may not be able to negotiate licenses on favorable terms, or at all. Additionally, we may lose rights granted under licenses for reasons beyond our control or if the license has a finite term and cannot be renewed on favorable terms or at all.

We may never realize the full value of our intangible assets, which represent a significant portion of our total assets.

At December 31, 2019, we had $1.6 billion of goodwill and other intangible assets, representing 69% of our total assets. These intangible assets consist primarily of goodwill, trademarks, tradenames, customer lists and patented technology arising from our acquisitions. Goodwill and other intangible assets with indefinite lives are not amortized, but are tested annually or upon the occurrence of certain events that indicate that the assets may be impaired. Definite lived intangible assets are amortized over their estimated useful lives and are tested for impairment upon the occurrence of certain events that indicate that the assets may be impaired. We may not receive the recorded value for our intangible assets if we sell or liquidate our business or assets. In addition, our significant amount of intangible assets increases the risk of a large charge to earnings in the event that the recoverability of these intangible assets is impaired. In the event of a significant charge to earnings, the market price of our common stock could be adversely affected. In addition, intangible assets with definite lives, which represent $685.5 million of our net intangible assets at December 31, 2019, will continue to be amortized. These expenses will continue to reduce our future earnings or increase our future losses.

We have significant indebtedness that could affect our operations and financial condition, and our failure to meet certain financial covenants required by our debt agreements may materially and adversely affect our assets, financial position and cash flows.

At December 31, 2019,we had $825 million in principal amount of debt outstanding. As of December 31, 2019, our debt service obligations, comprised of principal and interest, are estimated to be approximately $70 million for 2020. The outstanding indebtedness and the terms and covenants of the agreements under which this debt was incurred, could, among other things:

- require us to dedicate a large portion of our cash flow from operations to the servicing and repayment of our outstanding indebtedness, thereby reducing funds available for working capital, capital expenditures, RD&E expenditures and other general corporate requirements;
- limit our ability to obtain additional financing to fund future working capital, capital expenditures, RD&E expenditures and other general corporate requirements in the future;
- limit our flexibility in planning for, or reacting to, changes in our business and the industry in which we operate;
- restrict our ability to make strategic acquisitions or dispositions or to exploit business opportunities;
- place us at a competitive disadvantage compared to our competitors that have less outstanding indebtedness; and
- adversely affect the market price of our common stock.

We may be adversely affected by proposals to reform LIBOR.

Certain of our financial arrangements, including under our Senior Secured Credit Facility, are made at variable interest rates that use the London Interbank Offered Rate ("LIBOR") (or metrics derived from or related to LIBOR), as a benchmark for establishing the interest rate. On July 27, 2017, the United Kingdom's Financial Conduct Authority announced that it intends to stop persuading or compelling banks to submit LIBOR rates after 2021. These reforms may cause LIBOR to cease to exist, new methods of calculating LIBOR to be established, or alternative reference rates to be established. At this time, we cannot fully predict the potential consequences of these reforms. These reforms could have an adverse impact on the market value for or value of LIBOR-linked loans, and other financial obligations or extensions of credit held by or due to us. Changes in market interest rates may influence our financing costs and returns on financial investments, and could reduce our earnings and cash flows.

Economic and credit market uncertainty could interrupt our access to capital markets, borrowings, or financial transactions to hedge certain risks, which could adversely affect our financial condition.

To date, we have been able to access debt and equity financing that has allowed us to complete acquisitions, make investments in growth opportunities and fund working capital requirements. In addition, we enter into financial transactions to hedge certain risks, including foreign exchange and interest rate risk. Our continued access to capital markets, the stability of our lenders under our Senior Secured Credit Facility and their willingness to support our needs, and the stability of the parties to our financial transactions that hedge risks are essential for us to meet our current and long-term obligations, fund operations, and fund our strategic initiatives. An interruption in our access to external financing or financial transactions to hedge risk could affect our business prospects and financial condition.

If we are not successful in making acquisitions to expand and develop our business, our operating results may suffer.

One facet of our growth strategy is to make acquisitions that complement our core competencies in technology and manufacturing to enable us to manufacture and sell additional or enhanced products to our existing customers and to expand our business into related markets. Our continued growth may depend on our ability to successfully identify and acquire companies that complement or enhance our existing business on acceptable terms. We may not be able to identify or complete future acquisitions. In addition, we will need to comply with the terms of our Senior Secured Credit Facility in order to pursue and complete future acquisitions. In connection with pursuing this growth strategy, some of the risks that we may encounter include expenses associated with and difficulties in identifying potential targets, the costs associated with unsuccessful acquisitions, and higher prices for acquired companies because of significant competition for attractive acquisition targets.

Successful integration and anticipated benefits of acquisitions cannot be assured and integration matters could divert attention of management away from operations.

Part of our business strategy includes acquiring additional businesses and assets. If we do not successfully integrate acquisitions, we may not realize anticipated operating advantages and cost savings. Our ability to realize the anticipated benefits from acquisitions will depend, to a large extent, on our ability to integrate these acquired businesses with our legacy businesses. Integrating and coordinating aspects of the operations and personnel of the acquired business with legacy businesses involves complex operational, technological and personnel-related challenges. This process is time-consuming and expensive, disrupts the businesses of both companies and may not result in the achievement of the full benefits expected by us, including cost synergies expected to arise from supply chain efficiencies and overlapping general and administrative functions.

The potential difficulties, and resulting costs and delays, include:

- managing a larger combined company;
- consolidating corporate and administrative infrastructures;
- issues in integrating manufacturing, warehouse and distribution facilities, RD&E and sales forces;
- difficulties attracting and retaining key personnel;
- loss of customers and suppliers and inability to attract new customers and suppliers;
- unanticipated issues in integrating information technology, communications and other systems;
- incompatibility of purchasing, logistics, marketing, administration and other systems and processes; and
- unforeseen and unexpected liabilities related to the acquired business.

Additionally, the integration of our legacy businesses with an acquired company's operations, products and personnel may place a significant burden on management and other internal resources. The attention of our management may be directed towards integration considerations and may be diverted from our day-to-day business operations, and matters related to the integration may require commitments of time and resources that could otherwise have been devoted to other opportunities that might have been beneficial to us and our business. The diversion of management's attention, and any difficulties encountered in the transition and integration process, could harm our business, financial condition and operating results.

We may not be able to maintain the levels of operating efficiency that acquired companies have achieved or might achieve separately. Successful integration of each acquisition will depend upon our ability to manage those operations and to eliminate redundant and excess costs. Difficulties in integration may be magnified if we make multiple acquisitions over a relatively short period of time. Because of difficulties in combining and expanding operations, we may not be able to achieve the cost savings and other size-related benefits that we hoped to achieve after these acquisitions.

We may not be able to attract, train and retain a sufficient number of qualified associates to maintain and grow our business.

We monitor the markets in which we compete and assess opportunities to better align expenses with revenues, while preserving our ability to make needed investments in RD&E projects, capital and our associates that we believe are critical to our long-term success. Our success will depend in large part upon our ability to attract, train, retain and motivate highly skilled associates. There is currently aggressive competition for employees who have experience in technology and engineering. We compete intensely with other companies to recruit and hire from this limited pool. The industries in which we compete for employees are characterized by high levels of employee attrition. Although we believe we offer competitive salaries and benefits, we may have to increase spending in order to attract, train and retain qualified personnel.

We are dependent upon our senior management team and key technical personnel and the loss of any of them could significantly harm us.

Our future performance depends to a significant degree upon the continued contributions of our senior management team and key technical personnel. In general, only highly qualified and trained scientists have the necessary skills to develop our products, which are often highly technical in nature. The loss or unavailability to us of any member of our senior management team or a key technical employee could significantly harm us. We face intense competition for these professionals from our competitors, customers and companies operating in our industry. To the extent that the services of members of our senior management team and key technical personnel would be unavailable to us for any reason, we would be required to hire other personnel to manage and operate our Company and to develop our products and technology, which could adversely impact our business. We may not be able to locate or employ these qualified personnel on acceptable terms or may need to increase spending in order to attract these qualified personnel.

We may not realize the expected benefits from our cost savings and consolidation initiatives or those initiatives may have unintended consequences, which may harm our business.

We have incurred significant charges related to various cost savings and consolidation initiatives. These initiatives were undertaken to improve our operational effectiveness, efficiencies and profitability. Information regarding some of these initiatives is discussed in Note 11 “Other Operating Expenses” of the Notes to Consolidated Financial Statements contained in Item 8 of this report. Cost reduction efforts under these initiatives include various cost and efficiency improvement measures, such as headcount reductions, the relocation of resources and administrative and functional activities, the closure of facilities, the transfer of production lines, the sale of non-strategic assets and other efforts to streamline our business, among other actions. These measures could yield unintended consequences, such as distraction of our management and associates, business disruption, disputes with customers, attrition beyond our planned reduction in workforce and reduced associate productivity. If any of these unintended consequences were to occur, they could adversely affect our business, financial condition and results of operations. In addition, headcount reductions and customer disputes may subject us to the risk of litigation, which could result in the incurrence of substantial costs. Moreover, our cost reduction efforts result in charges and expenses that impact our operating results. Our cost savings and consolidation initiatives, or other expense reduction measures we take in the future, may not result in the expected cost savings.

Interruptions of our manufacturing operations could delay production and adversely affect our operations.

Our products are designed and manufactured in facilities located around the world. In most cases, the manufacturing of specific product lines is concentrated in one or a few locations. If an event (including any weather or natural disaster-related event) occurred that resulted in material damage or loss of one or more of these manufacturing facilities or we lacked sufficient labor to fully operate the facility, we might be unable to transfer the manufacture of the relevant products to another facility or location in a cost-effective or timely manner, if at all. This potential inability to transfer production could occur for a number of reasons, including but not limited to a lack of necessary relevant manufacturing capability at another facility, or the regulatory requirements of the FDA or other governmental regulatory bodies. Other disruptions in our manufacturing operations for any reason, including equipment malfunction, failure to follow specific protocols and procedures, or environmental factors could lead to an inability to supply our customers with our products, unanticipated costs, lost revenues and damage to our reputation. In addition, our business involves complex manufacturing processes and the use of various hazardous materials,chemicals and other regulated substances, such as trichloroethylene, that can be dangerous to our associates. We must also comply with various health and safety regulations in the United States and abroad in connection with our operations. Although we employ safety procedures in the design and operation of our facilities, there is a risk that an accident or death could occur. Any accident, such as a chemical spill or fire, could result in significant manufacturing delays or claims for damages resulting from injuries, which would harm our operations and financial condition. The potential liability resulting from any such accident or death, to the extent not covered by insurance, could harm our financial condition or operating results. Any disruption of operations at any of our facilities, and in particular our larger facilities, could result in production delays, which could adversely affect our operations and harm our business.

Our business is subject to environmental regulations that could be costly to comply with.

Federal, state and local regulations impose various environmental controls on the manufacturing, transportation, storage, use and disposal of batteries and hazardous chemicals and other materials used in, and hazardous waste produced by the manufacturing of our products. Conditions relating to our historical operations, including a former manufacturing facility located in South Plainfield, New Jersey previously operated by a subsidiary of Lake Region Medical, may require expenditures for clean-up in the future. In addition, changes in environmental laws and regulations may impose costly compliance requirements on us or otherwise subject us to future liabilities. Additional or modified regulations relating to the manufacture, transportation, storage, use and disposal of materials used to manufacture our products or restricting disposal or transportation of batteries may be imposed that may result in higher costs or lower operating results. In addition, we cannot predict the effect that additional or modified environmental regulations may have on us or our customers.

We have a complex tax profile due to the global nature of our operations and may experience significant variability in our quarterly and annual effective tax rate due to several factors, including changes in the mix of pre-tax income and the jurisdictions to which it relates, business acquisitions, settlements with taxing authorities, and changes in tax rates.

Our global operations encompass multiple taxing jurisdictions. Variability in the mix and profitability of domestic and international activities, identification and resolution of various tax uncertainties, changes in tax laws and rates, and the extent to which we are able to realize net operating loss and other carryforwards included in deferred tax assets and avoid potential adverse outcomes included in deferred tax liabilities, among other matters, may significantly affect our effective income tax rate in the future.

Changes in international tax laws or additional changes in U.S. tax laws could materially affect our financial position and results of operations. In addition, many countries in the EU, as well as a number of other countries and organizations such as the Organization for Economic Cooperation and Development, are also actively considering changes to existing tax laws. If tax laws and related regulations change, our financial results could be materially impacted. Given the unpredictability of these possible changes and their potential interdependency, it is possible such changes could adversely impact our financial results.

Our effective income tax rate is the result of the income tax rates in the various countries in which we do business. Our mix of income and losses in these jurisdictions affects our effective tax rate. For example, relatively more income in higher tax rate jurisdictions would increase our effective tax rate and thus lower our net income. Similarly, if we generate losses in tax jurisdictions for which no benefits are available, our effective income tax rate will increase. Our effective income tax rate may also be impacted by the recognition of discrete income tax items, such as required adjustments to our liabilities for uncertain tax positions or our deferred tax asset valuation allowance. A significant increase in our effective income tax rate could have a material adverse impact on our earnings.

We have recorded deferred tax assets based on our assessment that we will be able to realize the benefits of our net operating losses and other favorable tax attributes. Realization of deferred tax assets involve significant judgments and estimates which are subject to change and ultimately depends on generating sufficient taxable income of the appropriate character during the appropriate periods. Changes in circumstances may affect the likelihood of such realization, which in turn may trigger a write-down of our deferred tax assets, the amount of which would depend on a number of factors. A write-down would reduce our reported net income, which may adversely impact our financial condition or results of operations or cash flows. In addition, we are potentially subject to ongoing and periodic tax examinations and audits in various jurisdictions, including with respect to the amount of our net operating losses and any limitation thereon. An adjustment to such net operating loss carryforwards, including an adjustment from a taxing authority, could result in higher tax costs, penalties and interest, thereby adversely impacting our financial condition, results of operations or cash flows.

Our operations are subject to cyber-attacks that could have a material adverse effect on our business, consolidated results of operations and consolidated financial condition.

In the ordinary course of business, our operations are, and in the future are expected to continue to be, dependent on digital technologies and information technology systems. We use these technologies and systems for internal purposes, including data storage, processing and transmissions, as well as in our interactions with customers and suppliers. The security of this information and these systems are important to our operations and business strategy. Digital technologies and systems have been, and in the future are expected to continue to be, subject to the risk of cyber-attacks. Despite our security measures, our information technology systems and infrastructure may be vulnerable to cyber-attacks by hackers or malware, or breached due to associate error, malfeasance or other disruptions. As the techniques used to obtain unauthorized access, disable or degrade service, or sabotage infrastructure and systems change frequently and may be difficult to detect for long periods of time, we may be unable to anticipate these techniques or implement adequate preventive measures. If our systems for protecting against cybersecurity risks prove insufficient, we could be adversely affected by, among other things: loss of or damage to intellectual property, proprietary or confidential information, or customer, supplier, or employee data; interruption of our business operations; and increased costs required to prevent, respond to, or mitigate cybersecurity attacks. In addition, any such breach could compromise our networks and the information stored there could be accessed, publicly disclosed or stolen. These risks could harm our reputation and brand, and our relationships with customers, suppliers, employees and other third parties, and may result in claims or proceedings against us. In certain circumstances, we may rely on third party vendors to process, store and transmit data for our business whose operations are subject to similar risks. These risks could have a material adverse effect on our business, financial condition and results of operations. While we maintain cyber-liability insurance, our insurance may not be sufficient to cover us against all losses that could potentially result from a breach of our systems or loss of sensitive data.

The failure of our information technology systems to perform as anticipated could disrupt our business and affect our financial condition.

The efficient operation of our business is dependent on our information technology ("IT") systems. Accordingly, we rely upon the capacity, reliability and security of our IT hardware and software infrastructure and our ability to expand and update this infrastructure in response to our changing needs. Despite our implementation of security measures, our systems and the systems of our third parties with whom we do business are vulnerable to damages from computer viruses, natural disasters, incursions by intruders or hackers, failures in hardware or software, power fluctuations, cyber terrorists and other similar disruptions. The failure of our IT systems to perform as anticipated for any reason or any significant breach of security could disrupt our business and result in numerous consequences, including reduced effectiveness and efficiency of operations, inappropriate disclosure of confidential information, increased overhead costs and loss of important information, which could have a material effect on our business and results of operations. In addition, we may be required to incur significant costs to protect against damage caused by these disruptions or security breaches in the future. Furthermore, if we fail to comply with an applicable law or regulation, such as the European Union-wide General Data Protection Regulation or any other data privacy regulation, or we or a third party suffer a loss or disclosure of our business or stakeholder information due to any number of causes ranging from catastrophic events or power outages to improper data handling or security breaches and our business continuity plans do not effectively address these failures on a timely basis, we may be exposed to potential disruption in operations, loss of customers, reputational, competitive and business harm as well as significant costs from remediation, litigation and regulatory actions.

Our international sales and operations are subject to a variety of market and financial risks and costs that could affect our profitability and operating results.

Our sales outside the U.S., which accounted for 44% of sales for 2019, and our operations in Europe, Asia, Mexico and South America are and will continue to be subject to a number of risks and potential costs, including:

- changes in foreign economic conditions or regulatory requirements;
- changes in foreign currency exchange rates;
- local product preferences and product requirements;
- outstanding accounts receivables that take longer to collect than is typical in the U.S.;
- difficulties in enforcing agreements through foreign legal systems;
- less protection of intellectual property in some countries outside of the U.S.;
- trade protection measures and import and export licensing requirements;
- work force instability;
- political and economic instability; and
- complex tax and cash management issues.

These risks are also present in connection with our entry into new geographic markets.

We earn revenue and incur expenses related to our foreign sales and operations that are denominated in a foreign currency. Additionally, to the extent that monetary assets and liabilities, including short-term and long-term intercompany loans, are recorded in a currency other than the functional currency of our foreign subsidiaries, these amounts are remeasured each period, with the resulting gain or loss being recorded in Other (Income) Loss, Net. We may buy hedges in certain currencies to reduce or offset our exposure to currency exchange fluctuations; however, these transactions may not be adequate or effective to protect us from the exposure for which they are purchased. Historically, foreign currency fluctuations have not had a material effect on our net financial results. However, fluctuations in foreign currency exchange rates could have a significant impact, positive or negative, on our financial results in the future.

Our international operations expose us to legal and regulatory risks, which could adversely affect our business.

Our profitability and international operations are, and will continue to be, subject to risks relating to changes in foreign legal and regulatory requirements. In addition, our international operations are governed by various U.S. laws and regulations, including the U.S. Foreign Corrupt Practices Act ("FCPA") and other similar anti-corruption laws in other countries that prohibit us and our business partners and other intermediaries from making improper payments or offers of payment to foreign governments and their officials and political parties for the purpose of obtaining or retaining business. Any alleged or actual violations of these regulations may subject us to government scrutiny, severe criminal or civil sanctions and other liabilities and could adversely affect our business, reputation, operating results, and financial condition.

Risks Related To Our Industries

The healthcare industry is highly regulated and subject to various political, economic and regulatory changes that could increase our compliance costs and force us to modify how we develop and price our products.

The healthcare industry is highly regulated and is influenced by changing political, economic and regulatory factors. Several of our product lines are subject to international, federal, state and local health and safety, packaging and product content regulations, including the new European Medical Device Regulation that goes into effect in May 2020, which was adopted by the European Union as a common legal framework for all European Union member states. In addition, medical devices are subject to regulation by the FDA and similar governmental agencies. These regulations cover a wide variety of product activities from design and development to labeling, manufacturing, promotion, sales and distribution. Compliance with these regulations is time consuming, burdensome and expensive and could adversely affect our ability to sell products. This may result in higher than anticipated costs or lower than anticipated revenues.

Furthermore, healthcare industry regulations are complex, change frequently and have tended to become more stringent over time. Federal and state legislatures have periodically considered and implemented programs to reform or amend the U.S. healthcare system at both the federal and state levels. In addition, these regulations may contain proposals to increase governmental involvement in healthcare, lower reimbursement rates or otherwise change the environment in which healthcare industry participants operate. We may be required to incur significant expenses to comply with these regulations or remedy past violations of these regulations. Our failure to comply with applicable government regulations could also result in cessation of portions or all of our operations, impositions of fines and restrictions on our ability to carry on or expand our operations. In addition, because many of our products are sold into regulated industries, we must comply with additional regulations in marketing our products.

In response to perceived increases in healthcare costs in recent years, there have been and continue to be proposals by the Presidential administrations, members of Congress, state governments, regulators and third-party payors to control these costs and, more generally, to reform the U.S. healthcare system, including by repealing or replacing the Patient Protection and Affordable Care Act. Elements of health care reform 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 materially adversely impact numerous aspects of our business, results of operations and financial condition.

Our business is indirectly subject to healthcare industry cost containment 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 this 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.

Consolidation in the healthcare industry could result in greater competition and reduce our revenues and harm our business.

Many healthcare industry companies are consolidating to create new companies with greater market power. As the healthcare industry consolidates, competition to provide products and services to industry participants will become more intense. These industry participants may try to use their market power to negotiate price reductions for our products or may undertake additional vertical integration or supplier diversification initiatives. If we are forced to reduce our prices, our revenues would decrease and our operating results would suffer.

Our energy market revenues are dependent on conditions in the oil and natural gas industry, which historically have been volatile.

Sales of our products into the energy market depends upon the condition of the oil and gas industry. In the recent past, oil and natural gas prices have been subject to significant fluctuation and the oil and gas exploration and production industry has historically been cyclical, and it is likely that oil and natural gas prices will continue to fluctuate in the future. The current and anticipated prices of oil and natural gas influence the oil and gas exploration and production business and are affected by a variety of political and economic factors, including worldwide demand for oil and natural gas, worldwide and domestic supplies of oil and natural gas, the ability of the Organization of Petroleum Exporting Countries ("OPEC") to set and maintain production levels and pricing, the level of production of non-OPEC countries, the price and availability of alternative fuels, political stability in oil producing regions and the policies of the various governments regarding exploration and development of their oil and natural gas reserves. A change in the oil and gas exploration and production industry or a reduction in the exploration and production expenditures of oil and gas companies could cause our energy market revenues to decline.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

Our principal executive office and headquarters is located in Plano, Texas, in a leased facility. As of December 31, 2019, we operated 19 facilities in the U.S., three in Europe, three in Mexico, one in South America, and two in Asia. Of these facilities, 20 were leased and 8 were owned. We occupy approximately 1.8 million square feet of manufacturing and RD&E space worldwide. We believe the facilities we operate and their equipment are effectively utilized, well maintained, generally are in good condition, and will be able to accommodate our capacity needs to meet current levels of demand. We continuously review our anticipated requirements for facilities and, on the basis of that review, may from time to time acquire additional facilities, expand or dispose of existing facilities.

ITEM 3. LEGAL PROCEEDINGS

In April 2013, the Company commenced an action against AVX Corporation and AVX Filters Corporation (collectively "AVX") alleging that AVX had infringed the Company's patents by manufacturing and selling filtered feedthrough assemblies used in implantable pacemakers and cardioverter defibrillators that incorporate the Company's patented technology. Two juries in the United States District Court for the District of Delaware have returned verdicts finding that AVX infringed three of the Company's patents and awarded the Company $37.5 million in damages. In March 2018, the U.S. District Court for the District of Delaware vacated the original damage award and ordered a retrial on damages. In the January 2019 retrial on damages, the jury awarded the Company $22.2 million in damages. On July 31, 2019, the U.S. District Court for the District of Delaware entered an order denying AVX's post-trial motion to overturn the jury verdict in favor of the Company. On August 23, 2019, AVX filed its notice of appeal with the United States Court of Appeals for the Federal Circuit. On September 5, 2019, the Company filed its notice of cross-appeal with the United States Court of Appeals for the Federal Circuit.

In January 2015, LRM was notified by the New Jersey Department of Environmental Protection ("NJDEP") of NJDEP's intent to revoke a no further action determination made by NJDEP in favor of LRM in 2002 pertaining to a property on which a subsidiary of LRM operated a manufacturing facility in South Plainfield, New Jersey beginning in 1971. LRM sold the property in 2004 and vacated the facility in 2007. In response to NJDEP's notice, LRM further investigated the matter and submitted a technical report to NJDEP in August of 2015 that concluded that NJDEP's notice of intent to revoke was unwarranted. After reviewing the technical report, NJDEP issued a draft response in May 2016 stating that NJDEP would not revoke the no further action determination at that time but would require some additional site investigation to support the Company's conclusion. The Company is cooperating with NJDEP and has begun the requested additional investigation. In late 2019, NJDEP informed LRM that NJDEP was considering taking over the investigation of the property in light of LRM's difficulty in securing access to the property from the current owner. Separately, in April 2019, NJDEP indicated it believes the property to be a contributing source to local groundwater contamination. The Company disagrees with NJDEP's assertion; however, the Company is cooperating with NJDEP on this matter. The Company does not expect that this environmental matter will have a material effect on its consolidated results of operations, financial position or cash flows.

We are party to various other legal actions arising in the normal course of business. A description of pending legal actions against the Company is set forth in Note 13 "Commitments and Contingencies" of the Notes to Consolidated Financial Statements contained in Item 8 of this report. Other than as discussed in Note 13, we do not believe that the ultimate resolution of any pending legal actions will have a material effect on our consolidated results of operations, financial position or cash flows. However, litigation is subject to inherent uncertainties and there can be no assurance that any pending legal action, which we currently believe to be immaterial, does not become material in the future.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

PART II

ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

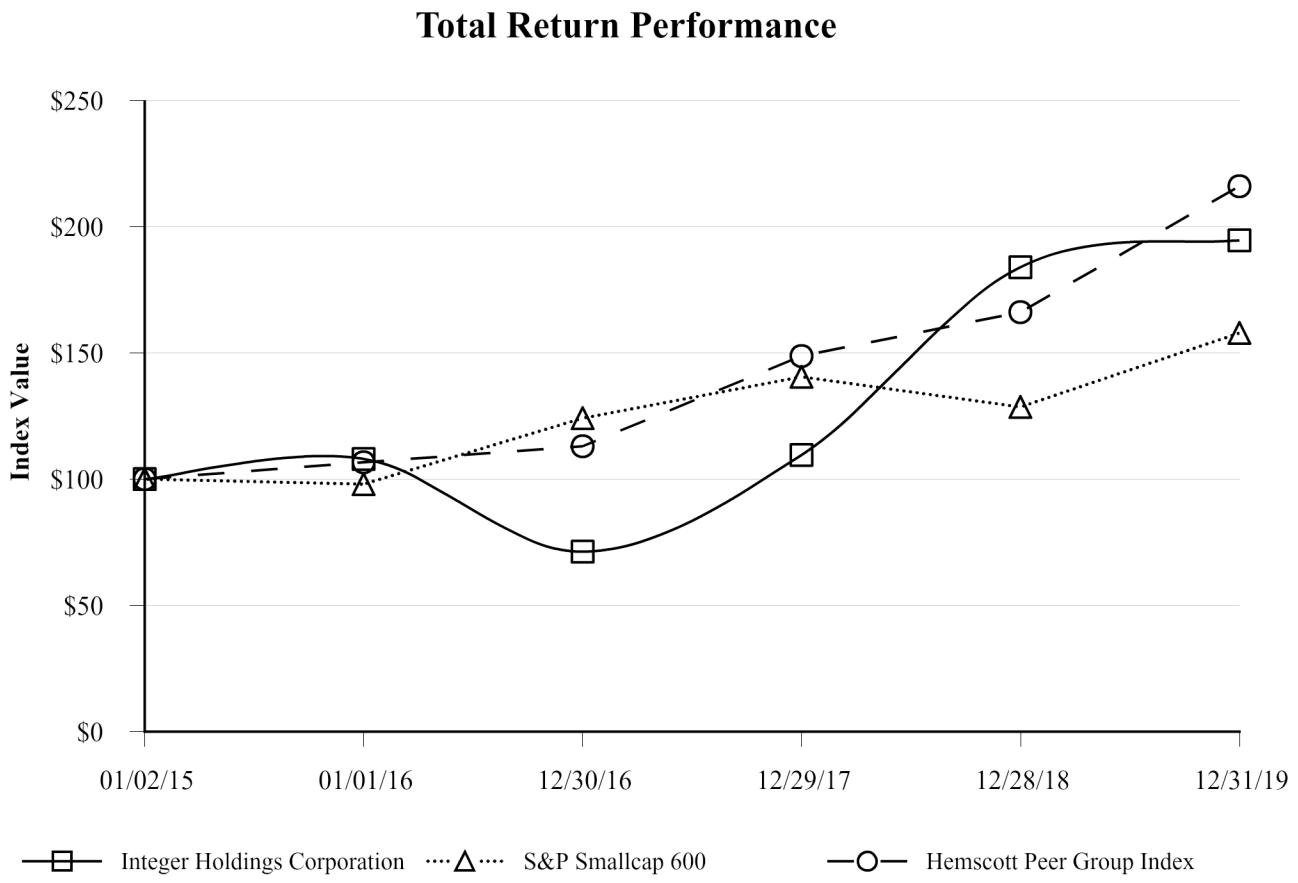
Market Information for Common Stock. The Company's common stock trades on the New York Stock Exchange ("NYSE") under the symbol "ITGR."

Stockholders. According to the records of our transfer agent, there were approximately 100 holders of record of our common stock on February 14, 2020. Because many of these shares are held by brokers and other institutions on behalf of the ultimate beneficial holders of these shares, we are unable to estimate the total number of stockholders represented by these record holders.

Dividends. We have not paid cash dividends and do not anticipate paying any cash dividends in the foreseeable future.

PERFORMANCE GRAPH

The following graph compares, for the five year period ended December 31, 2019, the cumulative total stockholder return for Integer Holdings Corporation, the S&P SmallCap 600 Index, and the Hemscott Peer Group Index. The Hemscott Peer Group Index includes approximately 100 comparable companies included in the Hemscott Industry Group 520 *Medical Instruments & Supplies* and 521 *Medical Appliances & Equipment*. The graph assumes that $100 was invested on January 2, 2015 and assumes reinvestment of dividends. No adjustments have been made for the value provided to shareholders for spin-offs, including the spin-off of Nuvectra by the Company in March 2016. The stock price performance shown on the following graph is not necessarily indicative of future price performance.



Company/Index	01/02/15	01/01/16	12/30/16	12/29/17	12/28/18	12/31/19
Integer Holdings Corporation	$ 100.00	$ 107.89	$ 71.22	$ 109.54	$ 183.86	$ 194.50
S&P Smallcap 600	100.00	98.03	124.06	140.48	128.56	157.85
Hemscott Peer Group Index	100.00	106.65	112.99	148.70	166.10	215.99

ITEM 6. SELECTED FINANCIAL DATA

Five-Year Summary Financial Data
(in thousands, except per share amounts)

This data should be read along with Item 7 "Management's Discussion and Analysis of Financial Condition and Results of Operations" and Item 8 "Financial Statements and Supplementary Data" appearing elsewhere in this report. Operating results for the 2015 though 2017 fiscal years were retrospectively revised from previously reported amounts to reclassify the operations for the AS&O Product Line as discontinued operations.

Historically, we have utilized a 52/53-week fiscal year ending on the Friday nearest December 31. In October 2019, the Board of Directors of Integer approved a change to the Company's fiscal year from a year ending on the Friday nearest December 31 to a calendar year ending on December 31. Fiscal years subsequent to 2019 will begin on January 1 and end on December 31 of each year. The Company's 2019 fiscal year began on December 29, 2018 and ended on December 31, 2019. Fiscal years 2018, 2017, 2016 and 2015 each consisted of fifty-two weeks and ended on December 28, 2018, December 29, 2017, December 30, 2016 and January 1, 2016, respectively.

	2019[1]	2018[1][2]	2017[1][2][3]	2016[1][2]	2015[1][2]
Summary of Operations for the Fiscal Year:					
Sales	$ 1,258,094	$ 1,215,012	$ 1,136,080	$ 1,075,502	$ 638,995
Income (loss) from continuing operations	91,218	47,033	87,087	24,878	(3,176)
Income (loss) from discontinued operations	5,118	120,931	(20,408)	(18,917)	(4,418)
Net income (loss)	96,336	167,964	66,679	5,961	(7,594)
Basic earnings (loss) per share:					
Income (loss) from continuing operations	$ 2.80	$ 1.46	$ 2.77	$ 0.81	$ (0.12)
Income (loss) from discontinued operations	0.16	3.76	(0.65)	(0.61)	(0.17)
Basic earnings (loss) per share	2.95	5.23	2.12	0.19	(0.29)
Diluted earnings (loss) per share:					
Income (loss) from continuing operations	$ 2.76	$ 1.44	$ 2.72	$ 0.80	$ (0.12)
Income (loss) from discontinued operations	0.15	3.71	(0.64)	(0.61)	(0.17)
Diluted earnings (loss) per share	2.92	5.15	2.08	0.19	(0.29)
Financial Position at Year End:					
Working capital	$ 236,317	$ 251,680	$ 322,906	$ 332,087	$ 360,764
Total assets	2,353,093	2,326,681	2,848,345	2,832,543	2,982,136
Long-term obligations	1,021,527	1,101,618	1,745,961	1,922,084	1,917,671

(1) In 2019, we acquired certain assets from USB. In 2016, we spun-off a portion of our former QiG segment, which became Nuvectra Corporation. In 2015, we acquired LRM. This data includes the results of operations of USB and LRM subsequent to acquisition and does not include the result of operations of Nuvectra subsequent to the Spin-off.

(2) From 2015 to 2019, we recorded material charges in Other Operating Expenses ("OOE"), primarily related to our cost savings and consolidation initiatives and our acquisitions. Additional information is set forth in Note 11 "Other Operating Expenses" of the Notes to Consolidated Financial Statements contained in Item 8 of this report.

(3) In the fourth quarter of 2017, we recognized a net benefit of $39.4 million as a result of the Tax Reform Act.

ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The following discussion and analysis of our financial condition and results of operations should be read together with our selected financial data and our consolidated financial statements and the related notes appearing elsewhere in this report. This discussion and analysis contains forward-looking statements that involve risks, uncertainties and assumptions. Our actual results may differ materially from those anticipated in these forward-looking statements as a result of many factors, including but not limited to those under the heading "Risk Factors" in Item 1A of this report.

Our Business

- Our business
- Discontinued operations and divestiture
- Recent acquisitions
- Strategic overview
- Financial overview

Our Financial Results

- Fiscal 2019 compared with fiscal 2018
- Liquidity and capital resources
- Off-balance sheet arrangements
- Contractual obligations
- Impact of recently issued accounting standards

Critical Accounting Estimates

- Inventories
- Valuation of goodwill, intangible and other long-lived assets

Our Business

Integer Holdings Corporation is one of the largest MDO manufacturers in the world serving the cardiac, neuromodulation, orthopedics, vascular and advanced surgical markets. We also develop batteries for high-end niche applications in the non-medical energy, military, and environmental markets. Our vision is to enhance the lives of patients worldwide by being our customers' partner of choice for innovative technologies and services.

We organize our business into two reportable segments, Medical and Non-Medical, and derive our revenues from four principle product lines. The Medical segment includes the Cardio & Vascular, Cardiac & Neuromodulation and Advanced Surgical, Orthopedics & Portable Medical product lines and the Non-Medical segment is comprised of the Electrochem product line. For more information on our segments, please refer to Note 18 "Segment and Geographic Information" of the Notes to Consolidated Financial Statements contained in Item 8 of this report.

Discontinued Operations and Divestiture

In July 2018, we completed the sale of the AS&O Product Line for net cash proceeds of approximately $581 million, resulting in the recognition of a pre-tax gain of approximately $195 million during the year ended December 28, 2018. In connection with the sale, the parties executed a transition services agreement whereby we provided certain corporate services (including accounting, payroll, and information technology services) to Viant to facilitate an orderly transfer of business operations. Viant paid us for these services as specified in the transition services agreement, which were complete as of June 28, 2019. In addition, the parties executed long-term supply agreements under which the parties have agreed to supply the other with certain products at prices specified in the agreements for a term of three years.

In June 2019, Viant paid us $4.8 million for the final net working capital adjustment, which was recognized as gain on sale from discontinued operations, net of taxes, during the quarter ended June 28, 2019.

The results of operations of the AS&O Product Line have been classified as discontinued operations for all periods presented. Prior period amounts have been reclassified to conform to the continuing operations reporting presentation. All results and information presented exclude the AS&O Product Line unless otherwise noted.

Recent Acquisitions

In October 2019, we purchased certain assets of USB, a developer and manufacturer of complex braided biomedical structures for disposable and implantable medical devices. The acquisition adds a differentiated capability related to the development and manufacture of complex braided and formed biomedical structures to our broad portfolio, that we believe further positions us as a partner of choice for innovative medical technologies.

Refer to Note 2 "Acquisition, Divestiture and Discontinued Operations" of the Notes to Consolidated Financial Statements contained in Item 8 of this report for additional information about the acquisition of certain assets of USB and the divestiture of the AS&O Product Line.

Strategic Overview

We continue to take steps to better align our resources in order to invest to grow and protect, and preserve our portfolio of products. In addition to our portfolio strategy, we have launched the execution of six key operational strategic imperatives designed to drive excellence in everything we do:

- Sales Force Excellence: We are changing the organization structure to match product line growth strategies and customer needs. This change is about getting more out of the capabilities we already have, and will increase individual accountability and clarity of ownership, while serving customers more effectively.
- Market Focused Innovation: We are ensuring we get the most return on our research and development investments. Integer is currently focusing on getting a clearer picture of how we spend our money and ensuring we are spending it in the right places so we can increase investments to drive future growth.
- Manufacturing Excellence: The goal is to deliver world-class operational performance in the areas of safety, quality, delivery and overall efficiency. We want to transition our manufacturing into a competitive advantage through a single, enterprise-wide manufacturing structure known as the Integer Production System. This system will provide standardized systems and processes by leveraging best practices and applying them across all of our global sites.
- Business Process Excellence: Integer is taking a systematic approach to driving excellence in everything we do by standardizing, optimizing and ultimately sustaining all of our processes.
- Performance Excellence: We are raising the bar on associate performance to maximize our impact. This includes aligning key roles with critical capabilities, positioning the best talent against the biggest work, and putting tools and processes in place to provide higher financial rewards for top performers, so our top performers can see increased results in pay for increased results in their performance.
- Leadership Capability: We have a robust plan to make leadership a competitive advantage for Integer, and since the success rate is higher with internal hires, we are focusing on finding and developing leaders from within the Company to build critical capabilities for future success.

We believe Integer is well-positioned within the medical technology and MDO manufacturing market and that there is a robust pipeline of opportunities to pursue. We have expanded our medical device capabilities and are excited about opportunities to partner with customers to drive innovation. We believe we have the scale and global presence, supported by world-class manufacturing and quality capabilities, to capture these opportunities. We are confident in our capabilities as one of the largest MDO manufacturers, with a long history of successfully integrating companies, driving down costs and growing revenues over the long-term. Ultimately, our strategic vision is to drive shareholder value by enhancing the lives of patients worldwide by being our customers' partner of choice for innovative technologies and services.

Financial Overview

Fiscal 2019 Compared with Fiscal 2018

Income from continuing operations for 2019 was $91.2 million or $2.76 per diluted share compared to $47.0 million or $1.44 per diluted share for 2018. These variances are primarily the result of the following:

- Sales from continuing operations for 2019 increased 4% primarily driven by growth in Cardio & Vascular and Cardiac & Neuromodulation sales.
- Gross profit for 2019 decreased $7.7 million, primarily due to higher costs of sales due to inventory write-downs and other expenses totaling $21.4 million related to a customer who filed bankruptcy in 2019 (see "Customer Bankruptcy"), partially offset by a $43.1 million increase in sales from continuing operations.
- Operating expenses for 2019 decreased by 5% compared to 2018, due to decreases of $3.7 million in SG&A expenses, $2.1 million in RD&E expenses and $3.9 million in Other Operating Expenses.
- Interest expense for 2019 decreased by $46.8 million primarily due to lower outstanding debt balances due to the repayment of debt over the last year and extinguishment of debt charges included in 2018 related to the repayment of indebtedness in connection with the divestiture of the AS&O Product Line. Debt extinguishment expenses included in interest expense for 2019 were lower by $40.1 million compared to 2018.
- We recognized a net loss on equity investments of $0.5 million in 2019, compared to a net gain on equity investments of $5.6 million during 2018. Gains and losses on equity investments are generally unpredictable in nature.
- Other income, net for 2019 was $0.6 million compared to other loss, net of $0.8 million during 2018, primarily due to foreign currency gains in 2019 compared to foreign currency losses in 2018.
- We recorded an income tax provision of $14.0 million for 2019, compared to a provision of $14.1 million for 2018. Refer to Note 12 "Income Taxes" of the Notes to Consolidated Financial Statements contained in Item 8 of this report and the "Provision for Income Taxes" section of this Item for additional information.

Fiscal 2018 Compared with Fiscal 2017

Income from continuing operations for 2018 was $47.0 million or $1.44 per diluted share compared to $87.1 million or $2.72 per diluted share for 2017. These variances were primarily the result of the following:

- Sales from continuing operations for 2018 increased 7% primarily driven by market growth and new business wins. During 2018, price concessions given to our larger OEM customers in return for long-term volume commitments and foreign currency exchange rate lowered sales by approximately $15 million and $2 million, respectively in comparison to 2017.
- Gross profit for 2018 increased $8.7 million primarily due to the increase in sales from continuing operations discussed above, partially offset by higher incentive compensation ($5.1 million) costs.
- Operating expenses for 2018 were lower by $21.3 million compared to 2017, due to a decrease in other operating expenses ($20.4 million) attributable to the completion of spending on integration activities partially offset by higher incentive compensation ($6.0 million).
- Interest expense for 2018 increased by $35.3 million primarily due to extinguishment of debt charges related to the repayment of indebtedness in connection with the divestiture of the AS&O Product Line. We recognized losses from extinguishment of debt during 2018 and 2017 of $42.7 million and $3.5 million, respectively. The 2018 amount includes a "make-whole" premium of $31.3 million, paid as a result of redeeming our 9.125% senior notes due on November 1, 2023 (the "Senior Notes") in July 2018.
- Net gains on equity investments increased income by $5.6 million in 2018 compared to losses of $1.6 million during 2017.
- Other loss, net for 2018 was $0.8 million compared to $10.9 million during 2017, primarily due to the non-recurrence of a non-cash foreign currency charge in the prior year on inter-company loans.
- We recorded an income tax provision of $14.1 million for 2018, compared to a benefit of $37.8 million for 2017. The 2017 amount included a tax benefit of $39.4 million related to the Tax Reform Act that was recorded in the fourth quarter of 2017.

Our Financial Results

The following table presents selected financial information derived from our Consolidated Financial Statements, contained in Item 8 of this report, for the periods presented (dollars in thousands, except per share amounts):

				Change 2019 vs. 2018		Change 2018 vs. 2017	
	2019	2018	2017	$	%	$	%
Medical Sales:							
Cardio & Vascular	$ 610,056	$ 585,464	$ 530,831	$ 24,592	4 %	$ 54,633	10 %
Cardiac & Neuromodulation	457,194	443,347	428,275	13,847	3 %	15,072	4 %
Advanced Surgical, Orthopedics & Portable Medical	132,429	133,225	120,006	(796)	(1)%	13,219	11 %
Total Medical Sales	1,199,679	1,162,036	1,079,112	37,643	3 %	82,924	8 %
Non-Medical	58,415	52,976	56,968	5,439	10 %	(3,992)	(7)%
Total sales	1,258,094	1,215,012	1,136,080	43,082	4 %	78,932	7 %
Cost of sales	903,084	852,347	782,070	50,737	6 %	70,277	9 %
Gross profit	355,010	362,665	354,010	(7,655)	(2)%	8,655	2 %
Gross profit as a % of sales	*28.2%*	*29.8%*	*31.2 %*				
Selling, general and administrative expenses ("SG&A")	138,695	142,441	143,073	(3,746)	(3)%	(632)	— %
SG&A as a % of sales	*11.0%*	*11.7%*	*12.6 %*				
Research, development and engineering costs ("RD&E")	46,529	48,604	48,850	(2,075)	(4)%	(246)	(1)%
RD&E as a % of sales	*3.7%*	*4.0%*	*4.3 %*				
Other operating expenses	12,151	16,065	36,438	(3,914)	(24)%	(20,373)	(56)%
Operating income	157,635	155,555	125,649	2,080	1 %	29,906	24 %
Operating income as a % of sales	*12.5%*	*12.8%*	*11.1 %*				
Interest expense	52,545	99,310	63,972	(46,765)	(47)%	35,338	55 %
(Gain) loss on equity investments, net	475	(5,623)	1,565	6,098	NM	(7,188)	NM
Other (income) loss, net	(578)	752	10,853	(1,330)	NM	(10,101)	NM
Income from continuing operations before taxes	105,193	61,116	49,259	44,077	72 %	11,857	24 %
Provision (benefit) for income taxes	13,975	14,083	(37,828)	(108)	(1)%	51,911	NM
Effective tax rate	*13.3%*	*23.0%*	*(76.8)%*				
Income from continuing operations	$ 91,218	$ 47,033	$ 87,087	$ 44,185	94 %	$ (40,054)	97 %
Income from continuing operations as a % of sales	*7.3%*	*3.9%*	*7.7 %*				
Diluted earnings per share from continuing operations	$ 2.76	$ 1.44	$ 2.72	$ 1.32	92 %	$ (1.28)	106 %

NM - Calculated change not meaningful.

Customer Bankruptcy

In November 2019, one of our customers, Nuvectra, filed a voluntary petition in U.S. Bankruptcy Court for the Eastern District of Texas seeking relief under Chapter 11 of the U.S. Bankruptcy Code (the "Customer Bankruptcy"). During the fourth quarter of 2019, we recorded pre-tax charges totaling $24.2 million in connection with the Customer Bankruptcy. These charges were primarily non-cash and were associated with certain Nuvectra-related assets, primarily consisting of inventory, accounts receivable, as well as certain non-cancelable inventory commitments. These charges were included in cost of sales ($21.4 million), SG&A expenses ($2.4 million) and Other Operating Expenses ($0.4 million) in our Consolidated Statement of Operations for the year ended December 31, 2019.

The following discussion is a comparison between fiscal year 2019 and fiscal year 2018 results. For a discussion of our results of operations for the fiscal year ended December 28, 2018 compared to the fiscal year ended December 29, 2017, please refer to Item 7 of Part II, "Management's Discussion and Analysis of Financial Condition and Results of Operations" in our Annual Report on Form 10-K for the fiscal year ended December 28, 2018, which was filed with the SEC on February 22, 2019.

Fiscal 2019 Compared with Fiscal 2018

Sales

Sales by product line for 2019 and 2018 were as follows (dollars in thousands):

			Change	
	2019	2018	$	%
Medical Sales:				
Cardio & Vascular	$ 610,056	$ 585,464	$ 24,592	4.2 %
Cardiac & Neuromodulation	457,194	443,347	13,847	3.1 %
Advanced Surgical, Orthopedics & Portable Medical	132,429	133,225	(796)	(0.6)%
Total Medical Sales	1,199,679	1,162,036	37,643	3.2 %
Non-Medical	58,415	52,976	5,439	10.3 %
Total sales	$ 1,258,094	$ 1,215,012	$ 43,082	3.5 %

Total 2019 sales increased 4% to $1.258 billion in comparison to 2018. The most significant drivers of this increase were as follows:

Cardio & Vascular sales for 2019 increased $24.6 million or 4% in comparison to 2018. This increase was driven by incremental sales from the signing of a customer contract on existing business ("new customer agreement") and growth of peripheral vascular and structural heart, partially offset by the impact of an end of life electrophysiology program. During 2019, price reductions reduced Cardio & Vascular sales by $6.7 million in comparison to 2018. Foreign currency exchange rate fluctuations decreased Cardio & Vascular sales for 2019 by $2.5 million in comparison to 2018 primarily due to U.S. dollar fluctuations relative to the Euro.

Cardiac & Neuromodulation sales for 2019 increased $13.8 million or 3% in comparison to 2018. The increase in Cardiac & Neuromodulation sales was mainly due to CRM growth, partially offset by a decline in neuromodulation sales. Higher market demand and the new customer agreement on existing business drove the CRM increase, whereas neuromodulation sales declined as a result of the Customer Bankruptcy and market contraction. During 2019, price reductions reduced Cardiac & Neuromodulation sales by approximately $6.9 million in comparison to 2018. Foreign currency exchange rate fluctuations did not have a material impact on Cardiac & Neuromodulation sales during 2019 in comparison to 2018.

In addition to Portable Medical sales, Advanced Surgical, Orthopedic & Portable Medical includes sales to the acquirer of our AS&O Product Lines, Viant, under the LSA for the sale of products by the Company to Viant. Advanced Surgical, Orthopedics & Portable Medical sales for 2019 decreased by $0.8 million in comparison to 2018. Price reductions reduced Advanced Surgical, Orthopedic & Portable Medical sales by $0.7 million in comparison to 2018. Foreign currency exchange rate fluctuations did not have a material impact on Advanced Surgical, Orthopedic & Portable Medical sales during 2019 in comparison to 2018.

Non-Medical sales for 2019 increased $5.4 million or 10% in comparison to 2018. The increases in Non-Medical sales were primarily driven by strong demand in the military market and high-single-digit growth with energy customers. Price and foreign currency exchange rate fluctuations did not have a material impact on Non-Medical sales during 2019 in comparison to 2018.

Gross Profit

Changes to gross profit as a percentage of sales ("Gross Margin") from the prior year were due to the following:

	% Change 2019 vs. 2018
Price[(a)]	(1.1)%
Mix[(b)]	0.1
Customer Bankruptcy[(c)]	(1.7)
Production efficiencies and volume[(d)]	1.1
Total percentage point change to gross profit as a percentage of sales	(1.6)%

(a) Our Gross Margin for 2019 was negatively impacted by price concessions given to our larger OEM customers in return for long-term volume commitments.

(b) Amount represents the impact to our Gross Margin attributable to changes in the mix of product sales during the period.

(c) Amount represents the impact to our Gross Margin attributable to the aforementioned Customer Bankruptcy.

(d) Represents various increases and decreases to our Gross Margin. Overall, our Gross Margin for 2019 was positively impacted by production efficiencies, mainly due to our Manufacturing Excellence imperative, as well as higher sales volume and lower amortization expense.

Over the long-term, we expect our Gross Margin to improve as we execute our manufacturing excellence strategic imperative and continue to deliver supply chain savings. However, we also expect our Gross Margin to continue to be negatively impacted by pricing pressures from our customers. It is imperative to drive manufacturing efficiencies and supply chain savings to offset these pricing pressures.

SG&A Expenses

Changes to SG&A expenses were primarily due to the following (in thousands):

	$ Change 2019 vs. 2018
Customer Bankruptcy[(a)]	$ 2,384
Professional fees[(b)]	(2,265)
Compensation and benefit costs	(1,693)
All other SG&A, net[(c)]	(2,172)
Net decrease in SG&A Expenses	$ (3,746)

(a) Amount consists primarily of a $2.3 million reserve against outstanding receivables attributable to the aforementioned Customer Bankruptcy.

(b) Professional fees decreased during 2019 compared to 2018, primarily due to lower legal costs, including legal expenses incurred related to our on-going patent infringement case. Refer to Note 13 "Commitments and Contingencies" of the Notes to the Condensed Consolidated Financial Statements contained in Item 8 of this report for information related to this patent infringement litigation.

(c) Represents net decreases in SG&A expenses, primarily from lower expense for contract services, utilities, depreciation and recruiting and relocation.

RD&E Expenses

RD&E expenses for 2019 and 2018 were $46.5 million and $48.6 million, respectively, which reflects the impact of increased customer projects. RD&E expenses are influenced by the number and timing of in-process projects and labor hours and other costs associated with these projects. Our research and development initiatives continue to emphasize new product development, product improvements, and the development of new technological platform innovations.

Other Operating Expenses

OOE was comprised of the following for 2019 and 2018 (in thousands):

	2019	2018	Change
Strategic reorganization and alignment[(a)]	$ 5,812	$ 10,624	$ (4,812)
Manufacturing alignment to support growth[(b)]	2,145	3,089	(944)
Consolidation and optimization costs[(c)]	—	844	(844)
Acquisition and integration expenses[(d)]	377	—	377
Other general expenses[(e)]	3,817	1,508	2,309
Other operating expenses	$ 12,151	$ 16,065	$ (3,914)

(a) As a result of the strategic review of our customers, competitors and markets, we began taking steps in the fourth quarter of 2017 to better align our resources in order to enhance the profitability of our portfolio of products. These initiatives include improving our business processes and redirecting investments away from projects where the market does not justify the investment, as well as aligning resources with market conditions and our future strategic direction. Expenses for 2019 and 2018 primarily consist of severance costs and fees for professional services.

(b) In 2017, we initiated several initiatives designed to reduce costs, increase manufacturing capacity to accommodate growth and improve operating efficiencies. The plan involves the relocation of certain manufacturing operations and expansion of certain of our facilities.

(c) During 2018, we incurred costs primarily related to the closure of our Clarence, NY facility.

(d) Amounts include expenses related to the purchase of certain assets from USB.

(e) Amounts include expenses related to other initiatives not described above, which relate primarily to integration and operational initiatives to reduce costs and improve operational efficiencies. The 2019 amount primarily includes systems conversion expenses, expenses incurred in connection with the Customer Bankruptcy, and expenses related to the restructuring of certain legal entities of the Company. Expenses for 2018 primarily include severance costs and fees for professional services.

Refer to Note 11 "Other Operating Expenses" of the Notes to Consolidated Financial Statements contained in Item 8 of this report for additional information regarding these initiatives.

Interest Expense

Interest expense decreased $46.8 million to $52.5 million in 2019 from $99.3 million in 2018. We paid down $116.5 million of debt on our Senior Secured Credit Facilities during 2019. The weighted average interest rates paid on the average principal amount of debt outstanding during 2019 and 2018 was 4.99% and 4.97%, respectively. The weighted average interest rates paid in 2019 reflect increases in LIBOR during 2018, partially offset by reductions to the applicable interest rate margin of our Term Loan A facility. In November 2019, we reduced the applicable interest rate margins by amending our Senior Secured Credit Facilities. Cash interest expense decreased $6.2 million for 2019 when compared to 2018, primarily due to the decrease in outstanding borrowings. Debt related charges included in interest expense (i.e. deferred fee and discount amortization) for 2019 were $7.8 million for 2019 compared to $48.4 million for 2018. The decrease in debt related charges during 2019 compared to 2018 is primarily attributable to lower accelerated write-offs (losses from extinguishment of debt) of deferred fees and original issue discount related to prepayments of portions of our Term Loan B facility and Senior Notes during the respective periods and a "make-whole" premium of $31.3 million paid as a result of redeeming our Senior Notes in July 2018. We recognized losses from extinguishment of debt during 2019 and 2018 of $2.5 million and $42.7 million, respectively.

As of December 31, 2019, approximately 20% of our principal amount of debt outstanding was subject to variable rates, in comparison to approximately 80% as of December 28, 2018. During 2019, we entered into interest rate swap agreements that we expect will further reduce our exposure to fluctuations in the LIBOR rate. These swap agreements convert $465 million of our outstanding debt to fixed rate indebtedness for the next three to seven months, as well as extended our $200 million interest rate swap for an additional three years.

See Note 8 "Debt" of the Notes to Consolidated Financial Statements contained in Item 8 of this report for additional information pertaining to our debt.

(Gain) Loss on Equity Investments, Net

During 2019, we realized net losses of $0.5 million on our equity investments compared to net gains of $5.6 million for 2018. Gains and losses on equity investments are generally unpredictable in nature. During 2019, we recognized an impairment charge of $1.6 million related to an investment in one of our non-marketable equity securities. The residual amounts for 2019 and 2018 relate to our share of equity method investee gains/losses, including unrealized appreciation of the underlying interests of the investee. As of December 31, 2019 and December 28, 2018, the carrying value of our equity investments were $22.3 million and $22.8 million, respectively. See Note 17 "Financial Instruments and Fair Value Measurements" of the Notes to Consolidated Financial Statements contained in Item 8 of this report for further details regarding these investments.

Other (Income) Loss, Net

Other (Income) Loss, Net was income of $0.6 million during 2019 compared to losses of $0.8 million during 2018. Other (Income) Loss, Net includes the impact of foreign currency exchange rates on transactions denominated in foreign currencies. Our foreign currency transaction gains/losses are based on fluctuations of the U.S. dollar relative to the Euro, Mexican peso, Uruguayan pesos or Malaysian ringgits. The impact of foreign currency exchange rates on transactions denominated in foreign currencies included in Other (Income) Loss, Net for 2019 and 2018 were losses of $0.04 million and $1.6 million, respectively. We continually monitor our foreign currency exposures and seek to take steps to mitigate these risks. However, fluctuations in foreign currency exchange rates could have a significant impact, positive or negative, on our financial results in the future.

Provision for Income Taxes

During 2019 and 2018, our provision for income taxes was $14.0 million and $14.1 million, respectively. The stand-alone U.S. component of the effective tax rate for 2019 reflected a $5.7 million provision on $40.2 million of pre-tax book income (14.2%) versus a $7.0 million provision on $4.3 million of pre-tax book losses for 2018. The stand-alone International component of the effective tax rate for 2019 reflected an $8.3 million provision on $65.0 million of pre-tax book income (12.7%) versus a $7.1 million provision on $65.4 million of pre-tax book income (10.9%) for 2018. The provision for income taxes for 2019 differs from the U.S. statutory rate due to the following (dollars in thousands):

	U.S.		International		Combined	
	$	%	$	%	$	%
Income before provision for income taxes	$ 40,203		$ 64,990		$ 105,193	
Provision at statutory rate	$ 8,443	21.0%	$ 13,648	21.0%	$ 22,091	21.0%
Federal tax credits (including R&D)	(4,751)	(11.8)	(46)	(0.1)	(4,797)	(4.6)
Foreign rate differential	—	—	(5,479)	(8.4)	(5,479)	(5.2)
Stock-based compensation	(2,422)	(6.0)	—	—	(2,422)	(2.3)
Uncertain tax positions	(920)	(2.3)	—	—	(920)	(0.9)
State taxes, net of federal benefit	1,106	2.8	—	—	1,106	1.1
U.S. tax on foreign earnings, net of §250 deduction	5,201	12.9	—	—	5,201	4.9
Valuation allowance	(956)	(2.4)	(650)	(1.0)	(1,606)	(1.5)
Other	(5)	—	806	1.2	801	0.8
Provision for income taxes	$ 5,696	14.2%	$ 8,279	12.7%	$ 13,975	13.3%

On December 22, 2017, the Tax Reform Act was signed into law. This legislation significantly changes U.S. tax law by, among other things, lowering corporate income tax rates, implementing a territorial tax system and imposing a repatriation tax on deemed repatriated earnings of foreign subsidiaries. The Tax Reform Act permanently reduces the U.S. corporate income tax rate from a maximum of 35% to a flat 21% rate, effective January 1, 2018.

While the Tax Reform Act provides for a territorial tax system, beginning in 2018, it also includes a new U.S. tax on foreign earnings, the global intangible low-taxed income ("GILTI") provision.

The GILTI provision requires us to include foreign subsidiary earnings in excess of a deemed return on the foreign subsidiary's tangible assets in our U.S. income tax return. The Company has adopted the approach of recording the consequences of the new GILTI provision of the Tax Reform Act as a period cost when incurred.

The Company's effective tax rate for 2019 differs from the U.S. federal statutory tax rate of 21% due principally to the estimated impact of Federal Tax Credits (including R&D credits and Foreign tax credits), stock based compensation windfalls, and the impact of the Company's earnings realized in foreign jurisdictions with statutory rates that are different than the U.S. federal statutory rate. These benefits are partially offset by the impact of U.S taxes on foreign earnings, including the GILTI provision which requires the Company to include foreign subsidiary earnings in excess of a deemed return on a foreign subsidiary's tangible assets in its U.S. income tax return. The U.S. tax on foreign earnings is reflected net of a statutory deduction of 50% of the GILTI inclusion (subject to limitations based on U.S. taxable income, if any) and net of the Tax Reform Act provision (Foreign Derived Intangible Income, or "FDII") that provides a 37.5% deduction to domestic companies for certain foreign sales and services income. The primary foreign jurisdictions in which we operate and the statutory tax rate for each respective jurisdiction include Switzerland (22%), Mexico (30%), Uruguay (25%), and Ireland (12.5%). We currently have a tax holiday in Malaysia through April 2023 if certain conditions are met.

In addition to the impact of the Tax Reform Act described above, there is a prospective potential for volatility of our effective tax rate due to several factors, including changes in the mix of pre-tax income and the jurisdictions to which it relates, business acquisitions, settlements with taxing authorities, changes in tax rates, and foreign currency exchange rate fluctuations. In addition, we continue to explore tax planning opportunities that may have a material impact on our effective tax rate.

We believe it is reasonably possible that a reduction of approximately $0.6 million of the balance of unrecognized tax benefits may occur within the next twelve months as a result of the lapse of the statute of limitations and/or audit settlements. As of December 31, 2019, approximately $4.4 million of unrecognized tax benefits would favorably impact the effective tax rate (net of federal impact on state issues), if recognized.

Liquidity and Capital Resources

(dollars in thousands)	December 31, 2019	December 28, 2018
Cash and cash equivalents	$ 13,535	$ 25,569
Working capital from continuing operations	236,317	251,680
Current ratio from continuing operations	2.32	2.53

Cash and cash equivalents at December 31, 2019 decreased by $12.0 million from December 28, 2018 as excess cash on hand was used to pay down our debt. Working capital from continuing operations decreased by $15.4 million from December 28, 2018, primarily due to a decrease in inventory and cash balances, an increase in accounts payable and accrued expenses, partially offset by an increase in contract assets and accounts receivable.

At December 31, 2019, $12.6 million of our cash and cash equivalents were held by foreign subsidiaries. We intend to limit our distributions from foreign subsidiaries to previously taxed income or current period earnings. If distributions are made utilizing current period earnings, we will record foreign withholding taxes in the period of the distribution.

Summary of Cash Flow

The following cash flow summary information includes cash flows related to discontinued operations (in thousands):

	2019	2018
Cash provided by (used in):		
Operating activities	$ 165,358	$ 167,299
Investing activities	(58,862)	536,670
Financing activities	(117,926)	(725,080)
Effect of foreign currency exchange rates on cash and cash equivalents	(604)	2,584
Net change in cash and cash equivalents	$ (12,034)	$ (18,527)

Operating Activities - During 2019, we generated $165.4 million in cash from operations compared to $167.3 million in 2018. Cash income (i.e. net income plus adjustments to reconcile net income to net cash provided by operating activities) increased by $28.3 million in fiscal year 2019 primarily as a result of production efficiencies realized and lower interest payments, which outpaced the loss of operating income associated with the sale of the AS&O Product Line. This increase was offset by other significant changes in assets and liabilities affecting cash flows, mainly from a decrease in cash flows from accounts receivable and contract assets, which increased to support our sales growth, partially offset by an increase in cash flows from inventory.

Investing Activities – The $595.5 million decrease in net cash used in investing activities was primarily attributable to the lower net cash proceeds from the sale of the AS&O Product Line in 2018 and cash paid of $15.0 million for the acquisition of certain assets from USB in 2019. Investing activities for the 2019 included $4.8 million of cash proceeds from Viant resulting from the final net working capital adjustment for the sale of the AS&O Product Line, compared to net cash proceeds from the sale of the AS&O Product Line of approximately $582 million in 2018. Capital spending for 2019 increased by $3.3 million to $48.2 million compared to 2018. Our current expectation is that capital spending for for 2020 will be in the range of $60 million to $70 million. We anticipate that cash on hand, cash flows from operations and available borrowing capacity under our Revolving Credit Facility will be sufficient to fund these capital expenditures.

Financing Activities – Net cash used in financing activities during 2019 was $117.9 million compared to $725.1 million in 2018. Financing activities during 2019 included payments of $117.9 million related to paying down our debt obligations compared to $732.5 million in 2018. In connection with the completion of the sale of our AS&O Product Line, during 2018 we paid $579.3 million to pay down our debt, which included $360 million of our 9.125% Senior Notes, a "make-whole" premium of $31.3 million, $114 million of our Term Loan B facility and $74 million outstanding on our $200 million revolving credit facility (the "Revolving Credit Facility").

Capital Structure - As of December 31, 2019, our capital structure consists of $815 million of debt, net of deferred fees and discounts, under our senior secured credit facilities (the "Senior Secured Credit Facilities") and approximately 33 million shares of common stock outstanding. We have access to $193 million of borrowing capacity under our Revolving Credit Facility. We are also authorized to issue up to 100 million shares of common stock and 100 million shares of preferred stock. As of December 31, 2019, our contractual debt service obligations for 2020, consisting of principal and interest on our outstanding debt, are estimated to be approximately $70 million. Actual principal and interest payments may be higher if, for instance, the applicable interest rates on our Senior Secured Credit Facilities increase or we pay principal amounts in excess of the required minimums reflected in the contractual debt service obligations above.

Based on current expectations, we believe that our projected cash flows provided by operations, available cash and cash equivalents and potential borrowings under our Revolving Credit Facility are sufficient to meet our working capital, debt service and capital expenditure requirements for the next twelve months. If our future financing needs increase, we may need to arrange additional debt or equity financing. We continually evaluate and consider from time to time various financing alternatives to supplement our existing financial resources, including our Senior Secured Credit Facilities. However, we cannot be assured that we will be able to enter into any such arrangements on acceptable terms or at all.

Credit Facilities - As of December 31, 2019, we had senior secured credit facilities (the "Senior Secured Credit Facilities") that consist of (i) a $200 million revolving credit facility (the "Revolving Credit Facility"), which had available borrowing capacity of $193.2 million as of December 31, 2019, (ii) a $267 million term loan A facility (the "TLA Facility"), and (iii) an $558 million term loan B facility (the "TLB Facility"). The Senior Secured Credit Facilities will mature on October 27, 2022. The Senior Secured Credit Facilities include a mandatory prepayment provision customary for credit facilities of its nature.

The Revolving Credit Facility and the TLA Facility contain covenants requiring (A) a maximum total net leverage ratio of 4.50:1.00, subject to step downs of 25 basis points in both the first and second quarters of 2020 and (B) a minimum interest coverage ratio of adjusted EBITDA (as defined in the Senior Secured Credit Facilities) to interest expense of not less than 3.00:1.00. As of December 31, 2019, the Company was in compliance with these financial covenants. The TLB Facility does not contain any financial maintenance covenants. As of December 31, 2019, our total net leverage ratio, calculated in accordance with our credit agreement, was approximately 2.6 to 1.0. For the twelve month period ended December 31, 2019, our ratio of adjusted EBITDA to interest expense, calculated in accordance with our credit agreement, was approximately 7.0 to 1.0.

Failure to comply with these financial covenants would result in an event of default as defined under the Revolving Credit Facility and TLA Facility unless waived by the lenders. An event of default may result in the acceleration of our indebtedness. As a result, management believes that compliance with these covenants is material to us. As of December 31, 2019, our adjusted EBITDA would have to decline by approximately $129 million, or approximately 41%, in order for us to not be in compliance with our financial covenants. The Revolving Credit Facility is supported by a consortium of twelve lenders with no lender controlling more than 27% of the facility.

Refer to Note 8 "Debt" of the Notes to Consolidated Financial Statements contained in Item 8 of this report for further description of our outstanding debt.

Off-Balance Sheet Arrangements

We have no off-balance sheet arrangements within the meaning of Item 303(a)(4) of Regulation S-K.

Contractual Obligations

Presented below is a summary of contractual obligations and other minimum commitments as of December 31, 2019. Refer to Note 13 "Commitments and Contingencies" of the Notes to Consolidated Financial Statements contained in Item 8 of this report for additional information regarding self-insurance liabilities, which are not reflected in the table below.

	Payments due by period				
	Total	Less than 1 year	1-3 years	3-5 years	More than 5 years
Principal amount of debt outstanding	$ 825,474	$ 37,500	$ 787,974	$ —	$ —
Interest on debt[(a)]	89,036	32,822	56,214	—	—
Operating lease obligations[(b)]	54,871	9,793	16,420	12,034	16,624
Other[(c)]	86,367	78,018	8,349	—	—
Total	$ 1,055,748	$ 158,133	$ 868,957	$ 12,034	$ 16,624

(a) Interest payments in the table above reflect the contractual interest payments on our outstanding debt based upon the balance outstanding and applicable interest rates at December 31, 2019, and exclude the impact of the debt discount amortization and impact of interest rate swap agreements. Refer to Note 8 "Debt" of the Notes to Consolidated Financial Statements contained in Item 8 of this report for additional information regarding long-term debt.

(b) Refer to Note 14 "Leases" of the Notes to Consolidated Financial Statements contained in Item 8 of this report for additional information about our operating lease obligations.

(c) Amounts include inventory purchase commitments, which are legally binding and specify minimum purchase quantities. These commitments do not include open purchase orders.

This table does not reflect $4.4 million of unrecognized tax benefits, as we are uncertain if or when such amounts may be settled. Refer to Note 12 "Income Taxes" of the Notes to Consolidated Financial Statements in Item 8 of this report for additional information about these unrecognized tax benefits.

Impact of Recently Issued Accounting Standards

In the normal course of business, we evaluate all new accounting pronouncements issued by the Financial Accounting Standards Board ("FASB"), SEC, or other authoritative accounting bodies to determine the potential impact they may have on our Consolidated Financial Statements. Refer to Note 1 "Summary of Significant Accounting Policies" of the Notes to Consolidated Financial Statements contained in Item 8 of this report for additional information about these recently issued accounting standards and their potential impact on our financial condition or results of operations.

CRITICAL ACCOUNTING ESTIMATES

Management's discussion and analysis of financial condition and results of operations are based upon our consolidated financial statements which have been prepared in accordance with GAAP. We make estimates and assumptions in the preparation of our consolidated financial statements that affect the reported amounts of assets and liabilities, revenue and expenses and related disclosures of contingent assets and liabilities. We base our estimates and judgments upon historical experience and other factors that are believed to be reasonable under the circumstances. Changes in estimates or assumptions could result in a material adjustment to the consolidated financial statements.

We have identified several critical accounting estimates. An accounting estimate is considered critical if both: (a) the nature of the estimates or assumptions is material due to the levels of subjectivity and judgment involved, and (b) the impact of changes in the estimates and assumptions would have a material effect on the consolidated financial statements. This listing is not a comprehensive list of all of our accounting policies. For further information regarding the application of these and other accounting policies, see Note 1 "Summary of Significant Accounting Policies" of the Notes to Consolidated Financial Statements contained in Item 8 of this report.

Inventories

Inventories are measured on a first-in, first-out basis at the lower of cost or net realizable value. Net realizable value is the estimated selling prices in the ordinary course of business, less reasonably predictable costs of completion, disposal, and transportation. The valuation of inventory requires us to estimate obsolete or excess inventory, as well as inventory that is not of saleable quality.

Historically, our inventory adjustment has been adequate to cover our losses. However, variations in methods or assumptions could have a material impact on our results. If our demand forecast for specific products is greater than actual demand and we fail to reduce manufacturing output accordingly, we could be required to record additional inventory write-down or expense a greater amount of overhead costs, which would negatively impact our net income.

Valuation of Goodwill, Intangible and Other Long-Lived Assets

We make assumptions in establishing the carrying value, fair value and, if applicable, the estimated lives of our goodwill, intangible and other long-lived assets. Goodwill and intangible assets determined to have an indefinite useful life are not amortized. Instead, these assets are evaluated for impairment on an annual basis on the last day of our fiscal year and whenever events or business conditions change that could indicate that the asset is impaired. Long-lived assets are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset (asset group) may not be recoverable.

Evaluation of goodwill for impairment

We test each reporting unit's goodwill for impairment on the last day of our fiscal year and between annual tests if an event occurs or circumstances change that would more-likely-than-not reduce the fair value of a reporting unit below its carrying value. In conducting this annual impairment testing, we may first perform a qualitative assessment of whether it is more-likely-than-not that a reporting unit's fair value is less than its carrying value. If not, no further goodwill impairment testing is required. If it is more-likely-than-not that a reporting unit's fair value is less than its carrying value, or if we elect not to perform a qualitative assessment of a reporting unit, a quantitative analysis is performed, in which the fair value of the reporting unit is compared to its carrying value. If the carrying value of a reporting unit exceeds its fair value, an impairment loss is recognized equal to the excess, limited to the amount of goodwill allocated to that reporting unit.

We performed a qualitative assessment of our Medical reporting unit as of December 31, 2019. As part of this analysis, we evaluated factors including, but not limited to, our market capitalization and stock price performance, macro-economic conditions, market and industry conditions, cost factors, the competitive environment, and the operational stability and overall financial performance of the reporting unit. The assessment indicated that it was more likely than not that the fair value of the Medical reporting unit exceeded its carrying value. We elected to bypass the qualitative assessment and performed a quantitative analysis for our Non-Medical reporting unit. Resulting from the quantitative analysis, the fair value exceeded the carrying value of the Non-Medical reporting unit by approximately 160%. We do not believe that any of our reporting units are at risk for impairment. However, changes to the factors considered above could affect the estimated fair value of one or more of our reporting units and could result in a goodwill impairment charge in a future period. We may be unaware of one or more significant factors that, if we had been aware of, would cause our conclusion to change, which could result in a goodwill impairment charge in a future period.

Evaluation of indefinite-lived intangible assets for impairment

Our indefinite-lived intangible assets include the Greatbatch Medical and Lake Region Medical tradenames. Similar to goodwill, we perform an annual impairment review of our indefinite-lived intangible assets on the last day of our fiscal year, unless events occur that trigger the need for an interim impairment review. We have the option to first assess qualitative factors in determining whether it is more-likely-than-not that an indefinite-lived intangible asset is impaired. If we elect not to use this option, or we determine that it is more-likely-than-not that the asset is impaired, we perform a quantitative assessment that requires us to estimate the fair value of each indefinite-lived intangible asset and compare that amount to its carrying value. Fair value is estimated using the relief-from-royalty method. Significant assumptions inherent in this methodology include estimates of royalty rates and discount rates. The discount rate applied is based on the risk inherent in the respective intangible assets and royalty rates are based on the rates at which comparable tradenames are being licensed in the marketplace. Impairment, if any, is based on the excess of the carrying value over the fair value of these assets.

We performed a quantitative assessment to test our indefinite-lived intangible assets for impairment as of December 31, 2019. For the Greatbatch Medical tradename, the excess of the estimated fair value over carrying value (expressed as a percentage of carrying value) was in excess of its carrying value of $20 million by approximately 288% as of December 31, 2019. The Lake Region Medical tradename had an excess of the estimated fair value over carrying value of approximately 55% and a carrying value of $70 million at December 31, 2019. We do not believe that our indefinite-lived intangible assets are at risk for impairment. However, a significant increase in the discount rate, decrease in the terminal growth rate, increase in tax rates, decrease in the royalty rate or substantial reductions in our end-markets and volume assumptions could have a negative impact on the estimated fair values of either of our tradenames and require us to recognize impairments of these indefinite-lived intangible assets in a future period.

Evaluation of long-lived assets for impairment

Our long-lived assets consist primarily of property, plant and equipment and definite-lived intangible assets, including purchased technology and patents, and customer lists. Property, plant and equipment and definite-lived intangible assets are carried at cost. The cost of property, plant and equipment is charged to depreciation expense over the estimated life of the operating assets, primarily on a straight-line basis. Definite-lived intangible assets are amortized over the expected life of the asset. We assess long-lived assets and definite-lived intangible assets for impairment when events occur or circumstances change that would indicate that the carrying value of the asset may not be recoverable.

Factors that we consider in deciding when to perform an impairment review include, but are not limited to: a significant decrease in the market price of the asset (asset group); a significant change in the extent or manner in which the asset (asset group) is being used or in its physical condition; a significant change in legal factors or business climate that could affect the value of a long-lived asset (asset group), including an action or assessment by a regulator; an accumulation of costs significantly in excess of the amount originally expected for the acquisition or construction of a long-lived asset (asset group); a current-period operating or cash flow loss combined with a history of operating or cash flow losses or a projection or forecast that demonstrates continuing losses associated with the use of a long-lived asset (asset group); and a current expectation that it is more likely than not that a long-lived asset (asset group) will be sold or otherwise disposed of significantly before the end of its previously estimated useful life.

When impairment indicators exist, we determine if the carrying value of the long-lived asset(s) or definite-lived intangible asset(s) exceeds the related undiscounted future cash flows. In cases where the carrying value exceeds the undiscounted future cash flows, the carrying value is written down to fair value. Fair value is generally determined using a discounted cash flow analysis. When it is determined that the useful life of an asset (asset group) is shorter than the originally estimated life, and there are sufficient cash flows to support the carrying value of the asset (asset group), we accelerate the rate of depreciation/amortization in order to fully depreciate/amortize the asset over its shorter useful life.

Estimation of the cash flows and useful lives of long-lived assets and definite-lived intangible assets requires significant management judgment. Events could occur that would materially affect our estimates and assumptions. Unforeseen changes, such as the loss of one or more significant customers, technology obsolescence, or significant manufacturing disruption, amongst other factors, could substantially alter the assumptions regarding the ability to realize the return of our investment in long-lived assets, definite-lived intangible assets or their estimated useful lives. Also, as we make manufacturing process conversions and other facility consolidation decisions, we must make subjective judgments regarding the remaining cash flows and useful lives of our assets, primarily manufacturing equipment and buildings. Significant changes in these estimates and assumptions could change the amount of future depreciation or amortization expense or could create future impairments of these long-lived assets (asset groups) or definite-lived intangible assets.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

MARKET RISK

In the normal course of business, we are exposed to market risk primarily due to changes in foreign currency exchange rates and interest rates. Changes in these rates could result in fluctuations in our earnings and cash flows. We regularly assess these risks and have established policies and business practices to help protect against the adverse effects of these and other potential exposures. However, fluctuations in foreign currency exchange rates and interest rates could have a significant impact, positive or negative, on our financial results in the future.

Foreign Currency Exchange Rate Risk

We have foreign operations in Ireland, Israel, Malaysia, Mexico, Switzerland, and Uruguay which expose us to foreign currency exchange rate fluctuations due to transactions denominated in Euros, Israeli shekels, Malaysian ringgits, Mexican pesos, Swiss francs, and Uruguayan pesos, respectively. We continuously evaluate our foreign currency risk, and we use operational hedges, as well as forward currency exchange rate contracts, to manage the impact of currency exchange rate fluctuations on earnings and cash flows. We do not enter into currency exchange rate derivative instruments for speculative purposes. A hypothetical 10% change in the value of the U.S. dollar in relation to our most significant foreign currency exposures would have had an impact of approximately $5 million on our 2019 annual sales. This amount is not indicative of the hypothetical net earnings impact due to the partially offsetting impacts on cost of sales and operating expenses in those currencies. We estimate that foreign currency exchange rate fluctuations during 2019 decreased sales in comparison to 2018 by $2.6 million.

We had currency derivative instruments outstanding in the notional amount of $11.2 million as of December 31, 2019 and $55.7 million as of December 28, 2018. As of December 31, 2019 and December 28, 2018, we recorded a $0.7 million asset and $0.7 million liability, respectively, to recognize the fair value of these derivative instruments on our Consolidated Balance Sheets. The amounts recorded during 2019 related to our forward contracts were a decrease in Sales of $1.3 million and a decrease in Cost of Sales of $1.5 million. Refer to Note 17 “Financial Instruments and Fair Value Measurements” to the Consolidated Financial Statements contained in Item 8 of this report for additional information regarding our outstanding forward contracts.

To the extent that our monetary assets and liabilities, including short-term and long-term intercompany loans, are recorded in a currency other than the functional currency of the subsidiary, these amounts are remeasured each period at the period-end exchange rate, with the resulting gain or loss being recorded in Other (Income) Loss, Net, in the Consolidated Statements of Operations. Net foreign currency transaction gains and losses included in Other (Income) Loss, Net, amounted to a loss of $0.04 million for 2019 and a loss of $1.6 million for 2018. The loss in 2018 was primarily related to the remeasurement of intercompany loans and fluctuations of the U.S. dollar relative to the Euro. During 2017 and 2018, we took steps to eliminate the majority of these intercompany balances, resulting in the significantly lower foreign currency exchange rate losses in 2019 compared to 2018.

We translate all assets and liabilities of our foreign operations where the U.S. dollar is not the functional currency at the period-end exchange rate and translate sales and expenses at the average exchange rates in effect during the period. The net effect of these translation adjustments is recorded in the Consolidated Financial Statements as Comprehensive Income (Loss). The translation adjustment for 2019 was a $7.9 million loss and primarily related to the strengthening of the U.S. dollar relative to the Euro. Translation adjustments are not adjusted for income taxes as they relate to permanent investments in our foreign subsidiaries. A hypothetical 10% change in the value of the U.S. dollar in relation to our most significant foreign currency net assets would have had an impact of approximately $33 million on our foreign net assets as of December 31, 2019.

Interest Rate Risk

We regularly monitor interest rate risk attributable to our outstanding debt obligations. From time to time, we enter into interest rate swap agreements in order to reduce the cash flow risk caused by interest rate changes on our outstanding floating rate borrowings.

As of December 31, 2019, we had $825 million in principal amount of debt outstanding. Interest rates on our Revolving Credit Facility, TLA Facility and TLB Facility, reset, at our option, based upon the prime rate or LIBOR rate, thus subjecting us to interest rate risk. Our TLB Facility has a 1.00% LIBOR floor, thus is only variable when LIBOR interest rates are above 1.00%. A hypothetical one percentage point (100 basis points) change in the LIBOR rate on the $160 million of unhedged variable rate debt outstanding at December 31, 2019 would increase our interest expense by approximately $2 million.

As of December 31, 2019, approximately 20% of our principal amount of debt outstanding was subject to variable rates, in comparison to approximately 80% as of December 28, 2018. During 2019, we entered into interest rate swap agreements that we expect will further reduce our exposure to fluctuations in the LIBOR rate. These swap agreements convert $465 million of our outstanding debt to fixed rate indebtedness for the next three to six months, as well as extended our $200 million interest rate swap for an additional three years.

Under these swap agreements, we pay a fixed rate of interest and receive a floating rate equal to one-month LIBOR. The variable rate received from the swap agreements and the variable rate paid on the outstanding debt will have the same rate of interest, excluding the credit spread, and will reset and pay interest on the same date. The amount recorded during 2019 related to these interest rate swaps was a reduction of $1.6 million to Interest Expense. The swaps are being accounted for as cash flow hedges. As of December 31, 2019, these swaps had an unfavorable fair value of $3.1 million.

Refer to Note 8 “Debt” and Note 17 “Financial Instruments and Fair Value Measurements” of the Notes to Consolidated Financial Statements in Item 8 of this report for additional information about our outstanding debt and interest rate swap agreements, respectively.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

INTEGER HOLDINGS CORPORATION
Index to Consolidated Financial Statements

MANAGEMENT'S REPORT ON INTERNAL CONTROL OVER FINANCIAL REPORTING

The Company's certifying officers are responsible for establishing and maintaining adequate internal control over financial reporting. The Company's internal control over financial reporting is designed and maintained under the supervision of its certifying officers to provide reasonable assurance regarding the reliability of financial reporting and the preparation of the Company's consolidated financial statements for external reporting purposes in accordance with accounting principles generally accepted in the United States of America.

As of December 31, 2019, management conducted an assessment of the effectiveness of the Company's internal control over financial reporting based on the framework established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on this assessment, management has determined that the Company's internal control over financial reporting as of December 31, 2019 is effective. As permitted by guidance issued by the Securities and Exchange Commission, management excluded from its assessment of its system of internal control over financial reporting the operations associated with the assets acquired from US BioDesign, LLC, which were acquired on October 7, 2019. The acquired assets and operations constitute 1% of net assets, less than 1% of total assets, less than 1% of sales, and less than 1% of net income of the consolidated financial statement amounts as of and for the year ended December 31, 2019.

The effectiveness of internal control over financial reporting as of December 31, 2019 has been audited by Deloitte & Touche LLP, the Company's independent registered public accounting firm.

Dated: February 20, 2020

/s/ Joseph W. Dziedzic	/s/ Jason K. Garland
Joseph W. Dziedzic	Jason K. Garland
President & Chief Executive Officer	Executive Vice President & Chief Financial Officer

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the stockholders and the Board of Directors of Integer Holdings Corporation

Opinion on Internal Control over Financial Reporting

We have audited the internal control over financial reporting of Integer Holdings Corporation and subsidiaries (the "Company") as of December 31, 2019, 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 Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by COSO.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated financial statements and financial statement schedule as of and for the year ended December 31, 2019 of the Company and our report dated February 20, 2020 expressed an unqualified opinion on those consolidated financial statements and financial statement schedule and included an explanatory paragraph regarding the Company's adoption of a new accounting standard.

As described in Management's Report on Internal Control Over Financial Reporting, management excluded from its assessment the internal control over financial reporting at US BioDesign, LLC, which was acquired on October 7, 2019, and whose financial statements constitute 1% and less than 1% of net and total assets, respectively, less than 1% of sales, and less than 1% of net income of the consolidated financial statement amounts as of and for the year ended December 31, 2019. Accordingly, our audit did not include the internal control over financial reporting at US BioDesign, LLC.

Basis for Opinion

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

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control over Financial Reporting

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

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

/s/ Deloitte & Touche LLP

Williamsville, New York
February 20, 2020

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the stockholders and the Board of Directors of Integer Holdings Corporation

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Integer Holdings Corporation and subsidiaries (the "Company") as of December 31, 2019 and December 28, 2018, the related consolidated statements of operations, comprehensive income, cash flows, and stockholders' equity for the years ended December 31, 2019, December 28, 2018, and December 29, 2017, and the related notes and the schedule listed in the Index at Item 15 (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2019 and December 28, 2018, and the results of its operations and its cash flows for the years ended December 31, 2019, December 28, 2018, and December 29, 2017, in conformity with accounting principles generally accepted in the United States of America.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission and our report dated February 20, 2020 expressed an unqualified opinion on the Company's internal control over financial reporting.

Change in Accounting Principle

As discussed in Note 1 to the financial statements, the Company has changed its method of accounting for leases in fiscal year 2019 due to the adoption of Accounting Standards Update No. 2016-02, *Leases (Topic 842)*, as amended, using the option to not restate comparative periods and apply the standard as of the date of initial application.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matters

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

Inventories - Refer to Notes 1 and 4 to the financial statements

Critical Audit Matter Description

Inventories are stated at the lower of cost, determined using the first-in first-out method, or net realizable value. The valuation of inventory requires the Company to estimate obsolete or excess inventory, as well as inventory that is not of saleable quality. Variations in assumptions used could have a material impact to the amount of write-downs for excess, obsolete or expired inventory. A significant change in the timing or level of demand for specific products may result in recording material adjustments for excess, obsolete or expired inventory in the future.

Because the calculation for the valuation of the obsolete or excess inventory, as well as inventory that is not of saleable quality involved the use of both future customer orders and forecasted demand expectations to determine the timing or level of demand for the specific product, auditing the valuation of the reserve involved especially subjective judgment.

How the Critical Audit Matter Was Addressed in the Audit

Our audit procedures related to the valuation of obsolete or excess inventory, as well as inventory that is not of saleable quality, included the following, among others:

- We tested the effectiveness of controls over management's review of the periodic calculation of the valuation for slow moving, excess, and obsolete inventory.
- We tested management's process for determining the valuations of inventory, including:
    - We tested the accuracy and completeness of the source information underlying the determination of the valuation for slow moving, excess, and obsolete inventory.
    - We tested the demand forecasts by obtaining documentation to support customer orders, contracts, historical and future sales that corroborate the amount stated for demand.
    - We evaluated whether the methodology and assumptions applied by management are reasonable and consistent with the nature of the inventory.
    - We performed a retrospective review of the prior-year estimates for slow moving, excess, and obsolete inventories to determine whether management's judgments and assumptions relating to those estimates indicate a possible bias.

Other Intangible Assets, Net - Lake Region Medical Tradename - Refer to Notes 1 and 6 to the financial statements

Critical Audit Matter Description

The carrying value of the Lake Region Medical tradename intangible asset was $70 million as of December 31, 2019. The Company assesses its indefinite-lived intangible assets for impairment at least annually by comparing the fair value of the indefinite-lived asset to the carrying value. The fair value of the tradename is estimated using the relief-from-royalty method. The determination of the fair value requires management to make estimates and use assumptions, including those assumptions related to royalty rates for similar transactions and the discount rate to estimate the net present value of cash flows that would be derived from the royalties. Changes in these assumptions could have a significant impact on the fair value of the Lake Region Medical tradename asset and a significant change in fair value could cause a material impairment of the asset.

Given the determination of fair value of the Lake Region Medical tradename asset requires management to make significant estimates and assumptions relating to the selection of royalty and discount rates, performing audit procedures to evaluate the reasonableness of such estimates and assumptions required a high degree of auditor judgment and an increased extent of effort, including the need to involve our fair value specialists.

How the Critical Audit Matter Was Addressed in the Audit

Our audit procedures related to the assumptions used for the selection of the royalty rate and discount rate, included the following, among others:

- We performed sensitivity analysis of significant assumptions to evaluate changes in the fair value of the Lake Region Medical tradename asset that would result from changes in the assumptions.
- We tested the effectiveness of controls over management's intangible asset impairment evaluation, including those over the determination of the fair value of the Lake Region Medical tradename asset, such as controls related to management's selection of the royalty and discount rates.
- With the assistance of our fair value specialists, we evaluated the reasonableness of the royalty rate and discount rate by:
    - Testing the source information underlying the determination of the royalty and discount rates and the mathematical accuracy of the calculation.
    - Developing a range of independent estimates and comparing those to both market and industry data as well as to the royalty and discount rates selected by management.

/s/ Deloitte & Touche LLP

Williamsville, New York
February 20, 2020

We have served as the Company's auditor since 1985.

INTEGER HOLDINGS CORPORATION
CONSOLIDATED BALANCE SHEETS

(in thousands except share and per share data)	December 31, 2019	December 28, 2018
ASSETS		
Current assets:		
Cash and cash equivalents	$ 13,535	$ 25,569
Accounts receivable, net of allowance for doubtful accounts of $2.4 million and $0.6 million, respectively	191,985	185,501
Inventories	167,256	190,076
Contract assets	24,767	—
Prepaid expenses and other current assets	17,852	15,104
Total current assets	415,395	416,250
Property, plant and equipment, net	246,185	231,269
Goodwill	839,617	832,338
Other intangible assets, net	775,784	812,338
Deferred income taxes	4,438	3,937
Operating lease assets	42,379	—
Other assets	29,295	30,549
Total assets	$ 2,353,093	$ 2,326,681
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Current portion of long-term debt	$ 37,500	$ 37,500
Accounts payable	64,975	57,187
Income taxes payable	3,023	9,393
Operating lease liabilities	7,507	—
Accrued expenses and other current liabilities	66,073	60,490
Total current liabilities	179,078	164,570
Long-term debt	777,272	888,007
Deferred income taxes	187,978	203,910
Operating lease liabilities	37,114	—
Other long-term liabilities	19,163	9,701
Total liabilities	1,200,605	1,266,188
Commitments and contingencies (Note 13)		
Stockholders' equity:		
Preferred stock, $0.001 par value, authorized 100,000,000 shares; no shares issued or outstanding	—	—
Common stock, $0.001 par value; 100,000,000 shares authorized; 32,847,017 and 32,624,494 shares issued, respectively; 32,700,471 and 32,473,167 shares outstanding, respectively	33	33
Additional paid-in capital	701,018	691,083
Treasury stock, at cost, 146,546 and 151,327 shares, respectively	(8,809)	(8,125)
Retained earnings	440,258	344,498
Accumulated other comprehensive income	19,988	33,004
Total stockholders' equity	1,152,488	1,060,493
Total liabilities and stockholders' equity	$ 2,353,093	$ 2,326,681

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

INTEGER HOLDINGS CORPORATION
CONSOLIDATED STATEMENTS OF OPERATIONS

(in thousands except per share data)	Fiscal Year Ended December 31, 2019	December 28, 2018	December 29, 2017
Sales	$ 1,258,094	$ 1,215,012	$ 1,136,080
Cost of sales	903,084	852,347	782,070
Gross profit	355,010	362,665	354,010
Operating expenses:			
Selling, general and administrative expenses	138,695	142,441	143,073
Research, development and engineering costs	46,529	48,604	48,850
Other operating expenses	12,151	16,065	36,438
Total operating expenses	197,375	207,110	228,361
Operating income	157,635	155,555	125,649
Interest expense	52,545	99,310	63,972
(Gain) loss on equity investments, net	475	(5,623)	1,565
Other (income) loss, net	(578)	752	10,853
Income from continuing operations before taxes	105,193	61,116	49,259
Provision (benefit) for income taxes	13,975	14,083	(37,828)
Income from continuing operations	$ 91,218	$ 47,033	$ 87,087
Discontinued operations:			
Income (loss) from discontinued operations before taxes	5,296	188,313	(27,432)
Provision (benefit) for income taxes	178	67,382	(7,024)
Income (loss) from discontinued operations	$ 5,118	$ 120,931	$ (20,408)
Net income	$ 96,336	$ 167,964	$ 66,679
Basic earnings (loss) per share:			
Income from continuing operations	$ 2.80	$ 1.46	$ 2.77
Income (loss) from discontinued operations	0.16	3.76	(0.65)
Basic earnings per share	2.95	5.23	2.12
Diluted earnings (loss) per share:			
Income from continuing operations	$ 2.76	$ 1.44	$ 2.72
Income (loss) from discontinued operations	0.15	3.71	(0.64)
Diluted earnings per share	2.92	5.15	2.08
Weighted average shares outstanding:			
Basic	32,627	32,136	31,402
Diluted	33,037	32,596	32,056

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

INTEGER HOLDINGS CORPORATION
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

(in thousands except per share data)	Fiscal Year Ended December 31, 2019	December 28, 2018	December 29, 2017
Comprehensive Income			
Net income	$ 96,336	$ 167,964	$ 66,679
Other comprehensive income (loss):			
Foreign currency translation gain (loss)	(7,900)	(19,925)	65,860
Net change in cash flow hedges, net of tax	(4,580)	16	2,243
Defined benefit plan liability adjustment, net of tax	(536)	302	76
Other comprehensive income (loss), net	(13,016)	(19,607)	68,179
Comprehensive income	$ 83,320	$ 148,357	$ 134,858

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

INTEGER HOLDINGS CORPORATION
CONSOLIDATED STATEMENTS OF CASH FLOWS

(in thousands)	Fiscal Year Ended December 31, 2019	December 28, 2018	December 29, 2017
Cash flows from operating activities:			
Net income	$ 96,336	$ 167,964	$ 66,679
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	77,895	88,988	102,796
Debt related charges included in interest expense	7,772	49,110	10,911
Stock-based compensation	9,294	10,470	14,680
Non-cash charges related to customer bankruptcy	21,695	—	—
Non-cash lease expense	7,443	—	—
Non-cash (gain) loss on equity investments	475	(5,623)	2,965
Other non-cash (gains) losses	(162)	148	7,110
Deferred income taxes	(10,285)	61,126	(59,212)
Gain on sale of discontinued operations	(4,974)	(194,965)	—
Changes in operating assets and liabilities, net of acquisition:			
Accounts receivable	(6,976)	9,289	(34,597)
Inventories	3,724	(16,094)	(986)
Prepaid expenses and other assets	(31,060)	8,527	4,854
Accounts payable	1,887	(94)	4,887
Accrued expenses	(2,744)	(11,756)	14,977
Income taxes payable	(4,962)	209	14,293
Net cash provided by operating activities	165,358	167,299	149,357
Cash flows from investing activities:			
Acquisition of property, plant and equipment	(48,198)	(44,908)	(47,301)
Proceeds from sale of property, plant and equipment	28	1,379	472
Purchase of equity investments	(417)	(1,230)	(1,316)
Proceeds from sale of discontinued operations	4,734	581,429	—
Acquisition	(15,009)	—	—
Other investing activities	—	—	209
Net cash (used in) provided by investing activities	(58,862)	536,670	(47,936)
Cash flows from financing activities:			
Principal payments of long-term debt	(111,500)	(631,469)	(162,558)
Proceeds from senior secured revolving line of credit	34,000	5,000	50,000
Payments of senior secured revolving line of credit	(39,000)	(74,000)	(16,000)
Proceeds from the exercise of stock options	3,242	12,409	19,324
Payment of debt issuance and redemption costs	(1,385)	(31,991)	(2,360)
Tax withholdings related to net share settlements of restricted stock awards	(3,283)	(5,029)	(75)
Net cash used in financing activities	(117,926)	(725,080)	(111,669)
Effect of foreign currency exchange rates on cash and cash equivalents	(604)	2,584	2,228
Net decrease in cash and cash equivalents	(12,034)	(18,527)	(8,020)
Cash and cash equivalents, beginning of year	25,569	44,096	52,116
Cash and cash equivalents, end of year	$ 13,535	$ 25,569	$ 44,096

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

INTEGER HOLDINGS CORPORATION
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY

(in thousands)	Fiscal Year Ended December 31, 2019	December 28, 2018	December 29, 2017
Total equity, beginning balance	$ 1,060,493	$ 893,381	$ 725,239
Common stock and additional paid-in capital			
Balance, beginning of period	691,116	669,788	637,986
Cumulative effect adjustment of the adoption of ASU 2016-09	—	—	(812)
Stock awards exercised or vested	641	10,858	17,934
Stock-based compensation	9,294	10,470	14,680
Balance, end of period	701,051	691,116	669,788
Treasury stock			
Balance, beginning of period	(8,125)	(4,654)	(5,834)
Treasury shares purchased	(2,961)	(5,025)	—
Treasury shares reissued	2,277	1,554	1,180
Balance, end of period	(8,809)	(8,125)	(4,654)
Retained earnings			
Balance, beginning of period	344,498	176,068	109,087
Cumulative effect adjustment of the adoption of ASU 2016-09	—	—	302
Reclassification of certain tax effects related to the adoption of ASU 2018-02	—	466	—
Adoption of ASC 842 (Note 1)	(576)	—	—
Net income	96,336	167,964	66,679
Balance, end of period	440,258	344,498	176,068
Accumulated other comprehensive income			
Balance, beginning of period	33,004	52,179	(16,000)
Other comprehensive income (loss)	(13,016)	(19,607)	68,179
Reclassification of certain tax effects related to the adoption of ASU 2018-02	—	(466)	—
Reclassified to earnings, net (Note 16)	—	898	—
Balance, end of period	19,988	33,004	52,179
Total equity, ending balance	$ 1,152,488	$ 1,060,493	$ 893,381

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

(1.) SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Integer Holdings Corporation (together with its consolidated subsidiaries, "Integer" or the "Company") is a publicly traded corporation listed on the New York Stock Exchange under the symbol "ITGR." Integer is one of the largest medical device outsource manufacturers in the world serving the cardiac, neuromodulation, orthopedics, vascular, advanced surgical and portable medical markets. The Company provides innovative, high-quality medical technologies that enhance the lives of patients worldwide. In addition to medical technologies, the Company develops batteries for high-end niche applications in the energy, military, and environmental markets. The Company's customers include large multi-national original equipment manufacturers ("OEMs") and their affiliated subsidiaries.

On May 3, 2018, the Company entered into a definitive agreement to sell the Advanced Surgical and Orthopedic product lines (the "AS&O Product Line") within its Medical segment to Viant (formerly MedPlast, LLC), and on July 2, 2018 completed the sale. Refer to Note 2 "Acquisition, Divestiture and Discontinued Operations" for further details of these transactions.

Basis of Presentation and Principles of Consolidation

The consolidated financial statements have been prepared in conformity with accounting principles generally accepted in the United States of America ("GAAP") and include the accounts of Integer Holdings Corporation and its wholly owned subsidiaries. All intercompany balances and transactions have been eliminated in consolidation.

The results of operations of the AS&O Product Line are reported as discontinued operations in the Consolidated Statements of Operations for all periods presented. The Consolidated Statements of Cash Flows includes cash flows related to the discontinued operations due to Integer's (parent) centralized treasury and cash management processes, and, accordingly, cash flow amounts for discontinued operations are disclosed in Note 2 "Acquisition, Divestiture and Discontinued Operations." All results and information in the consolidated financial statements are presented as continuing operations and exclude the AS&O Product Line unless otherwise noted specifically as discontinued operations.

The Company organizes its business into two reportable segments: (1) Medical and (2) Non-Medical. The discontinued operations of the AS&O Product Line were reported in the Medical segment. Refer to Note 18 "Segment and Geographic Information," for additional information on the Company's reportable segments.

Fiscal Year

Historically, the Company has utilized a 52/53-week fiscal year ending on the Friday nearest December 31. On October 9, 2019, the Board of Directors of Integer approved a change to the Company's fiscal year from a year ending on the Friday nearest December 31 to a calendar year ending on December 31. The Company's current fiscal year began on December 29, 2018 and ended on December 31, 2019. Fiscal years subsequent to 2019 will begin on January 1 and end on December 31 of each year. The Company's first three fiscal quarters in each fiscal year will continue to end on the Friday nearest March 31, June 30 and September 30, respectively. Fiscal years 2018 and 2017 consisted of fifty-two weeks and ended on December 28, 2018 and December 29, 2017, respectively.

Use of Estimates

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and reported amounts of sales and expenses during the reporting periods. Actual results could differ materially from those estimates.

Reclassifications

Certain prior year amounts have been reclassified to conform to current year's presentation, which management does not consider to be material.

Cash and Cash Equivalents

Cash and cash equivalents consist of cash and highly liquid, short-term investments with maturities at the time of purchase of three months or less.

(1.) SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

Concentration of Credit Risk

Financial instruments that potentially subject the Company to concentration of credit risk consist principally of accounts receivable. A significant portion of the Company's sales and accounts receivable are to three customers, all in the medical device industry, and, as such, the Company is directly affected by the condition of those customers and that industry. However, the credit risk associated with trade receivables is partially mitigated due to the stability of those customers. The Company performs on-going credit evaluations of its customers. Note 18 "Segment and Geographic Information" contains information on sales and accounts receivable for these customers. The Company maintains cash deposits with major banks, which from time to time may exceed insured limits. The Company performs on-going credit evaluations of its banks.

Trade Accounts Receivable and Allowance for Doubtful Accounts

The Company provides credit, in the normal course of business, to its customers in the form of trade receivables. Credit is extended based on evaluation of a customer's financial condition and collateral is not required. The Company maintains an allowance for those customer receivables that it does not expect to collect. The Company accrues its estimated losses from uncollectable accounts receivable to the allowance based upon recent historical experience, the length of time the receivable has been outstanding and other specific information as it becomes available. Provisions to the allowance for doubtful accounts are charged to current operating expenses. Actual losses are charged against this allowance when incurred. In connection with a customer bankruptcy in the fourth quarter of 2019, the Company increased the reserve against outstanding receivables by $2.3 million.

Inventories

Inventories are stated at the lower of cost, determined using the first-in first-out method, or net realizable value. Net realizable value is the estimated selling prices in the ordinary course of business, less reasonably predictable costs of completion, disposal, and transportation. Write-downs for excess, obsolete or expired inventory are based primarily on how long the inventory has been held, historical sales volume, and estimates of forecasted net sales of that product. A significant change in the timing or level of demand for products may result in recording additional write-downs for excess, obsolete or expired inventory in the future. Note 4 "Inventories" contains additional information on the Company's inventory. In connection with a customer bankruptcy in the fourth quarter of 2019, the Company increased the reserve for excess, obsolete or expired inventory by $19.0 million.

Leases

The Company determines if an arrangement is, or contains, a lease at inception and classifies it at as finance or operating. The Company does not currently have any finance leases. The Company primarily leases certain office and manufacturing facilities under operating leases, with additional operating leases for machinery, office equipment and vehicles.

Lease right-of-use ("ROU") assets and corresponding liabilities are recognized based on the present value of the lease payments over the lease term at commencement date. When discount rates implicit in leases cannot be readily determined, the Company uses its incremental borrowing rate based on information available at commencement date in determining the present value of future payments. The incremental borrowing rate is determined based on the Company's recent debt issuances, the Company's specific credit rating, lease term and the currency in which lease payments are made.

Lease terms may include options to extend or terminate the lease when it is reasonably certain that the Company will exercise such option. Lease expense is recognized on a straight-line basis over the lease term. The Company elected to combine lease and non-lease components for all asset classes. For certain leases where rent escalates based upon a change in a financial index, such as the Consumer Price Index, the difference between the rate at lease inception and the subsequent fluctuations in that rate are included in variable lease costs. Additionally, because the Company has elected to not separate lease and non-lease components, variable costs also include payments to the landlord for common area maintenance, real estate taxes, insurance and other operating expenses. In addition, the Company does not apply the recognition requirements to leases with lease terms of 12 months or less.

(1.) SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

Property, Plant and Equipment ("PP&E")

PP&E is carried at cost less accumulated depreciation. Depreciation is computed by the straight-line method over the estimated useful lives of the assets, as follows: buildings and building improvements 12-30 years; machinery and equipment 3-10 years; office equipment 3-10 years; and leasehold improvements over the remaining lives of the improvements or the lease term, whichever is shorter. The costs of repairs and maintenance are expensed as incurred; renewals and betterments are capitalized. Upon retirement or sale of an asset, its cost and related accumulated depreciation or amortization is removed from the accounts and any gain or loss is recorded in operating income or expense. The Company also reviews its PP&E for impairment when impairment indicators exist. When impairment indicators exist, the Company determines if the carrying value of its fixed assets exceeds the related undiscounted future cash flows. In cases where the carrying value of the Company's long-lived assets or asset groups (excluding goodwill and indefinite-lived intangible assets) exceeds the related undiscounted cash flows, the carrying value is written down to fair value. Fair value is generally determined using a discounted cash flow analysis. Note 5 "Property, Plant and Equipment, Net" contains additional information on the Company's PP&E.

Fair Value Measurements

Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability (i.e. the "exit price") in an orderly transaction between market participants at the measurement date. Accounting Standards Codification ("ASC") 820, *Fair Value Measurements,* establishes a hierarchy for inputs used in measuring fair value that maximizes the use of observable inputs and minimizes the use of unobservable inputs by requiring that the most observable inputs be used when available. Observable inputs are inputs that market participants would use in pricing the asset or liability developed based on market data obtained from sources independent of the Company. Unobservable inputs are inputs that reflect the Company's assumptions about the assumptions market participants would use in pricing the asset or liability developed based on the best information available in the circumstances. The hierarchy is broken down into three levels based on the reliability of inputs as follows:

Level 1 – Valuation is based on quoted prices in active markets for identical assets or liabilities that the Company has the ability to access. Level 1 valuations do not entail a significant degree of judgment.

Level 2 – Valuation is determined from quoted prices for similar assets or liabilities in active markets, quoted prices for identical instruments in markets that are not active or by model-based techniques in which all significant inputs are observable in the market.

Level 3 – Valuation is based on unobservable inputs that are significant to the overall fair value measurement. The degree of judgment in determining fair value is greatest for Level 3 valuations.

Fair value is a market-based measure considered from the perspective of a market participant rather than an entity-specific measure. Therefore, even when market assumptions are not readily available, assumptions are required to reflect those that market participants would use in pricing the asset or liability at the measurement date. Note 17 "Financial Instruments and Fair Value Measurements" contains additional information on assets and liabilities recorded at fair value in the consolidated financial statements.

Acquisitions

Results of operations of acquired companies are included in the Company's results of operations as of the respective acquisition dates. The purchase price of each acquisition is allocated to the net assets acquired based on estimates of their fair values at the date of the acquisition. Any purchase price in excess of these net assets is recorded as goodwill.

In circumstances where an acquisition involves a contingent consideration arrangement, the Company recognizes a liability equal to the fair value of the contingent payments it expects to make as of the acquisition date. The Company re-measures this liability each reporting period and records changes in the fair value through Other Operating Expenses. Increases or decreases in the fair value of the contingent consideration liability can result from changes in discount periods and rates, as well as changes in the timing, amount of, or the likelihood of achieving the applicable contingent consideration.

All direct acquisition-related costs are expensed as incurred. The allocation of purchase price in certain cases may be subject to revision based on the final determination of fair values during the measurement period, which may be up to one year from the acquisition date.

(1.) SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

Discontinued Operations

In determining whether a group of assets which has been disposed of (or is to be disposed of) should be presented as a discontinued operation, the Company analyzes whether the group of assets being disposed of represented a component of the entity; that is, whether it had historic operations and cash flows that were clearly distinguished (both operationally and for financial reporting purposes). In addition, the Company considers whether the disposal represents a strategic shift that has or will have a major effect on the Company's operations and financial results.

The assets and liabilities of a discontinued operation held for sale, other than goodwill, are measured at the lower of carrying amount or fair value less cost to sell. When a portion of a goodwill reporting unit that constitutes a business is to be disposed of, the goodwill associated with that business is included in the carrying amount of the business based on the relative fair values of the business to be disposed of and the portion of the reporting unit that will be retained. The Company allocates interest to discontinued operations if the interest is directly attributable to the discontinued operations or is interest on debt that is required to be repaid as a result of the disposal transaction.

Goodwill

Goodwill represents the excess of cost over the fair value of identifiable net assets of a business acquired and is assigned to one or more reporting units. The Company's reporting units are the same as its reportable segments, Medical and Non-Medical. The Company tests each reporting unit's goodwill for impairment at least annually as of the last day of the fiscal year and between annual tests if an event occurs or circumstances change that would more-likely-than-not reduce the fair value of a reporting unit below its carrying amount. In conducting its goodwill test, the Company either performs a qualitative assessment or a quantitative assessment. A qualitative assessment requires that the Company consider events or circumstances including, but not limited to, macro-economic conditions, market and industry conditions, cost factors, competitive environment, changes in strategy, changes in customers, changes in the Company's stock price, results of the last impairment test, and the operational stability and the overall financial performance of the reporting units. If, after assessing the totality of events or circumstances, the Company determines that it is more likely than not that the fair values of its reporting units are greater than the carrying amounts, then the quantitative goodwill impairment test is not performed. The Company may elect to bypass the qualitative analysis and perform a quantitative analysis.

If the qualitative assessment indicates that the quantitative analysis should be performed or if management elects to bypass a qualitative analysis to perform a quantitative analysis, the Company then evaluates goodwill for impairment by comparing the fair value of each of its reporting units to its carrying value, including the associated goodwill. To determine the fair values, the Company uses a weighted combination of the market approach based on comparable publicly traded companies and the income approach based on estimated discounted future cash flows. The cash flow assumptions consider historical and forecasted revenue, operating costs and other relevant factors.

The Company completed its annual goodwill impairment test as of December 31, 2019 and determined, after performing a qualitative review of its Medical reporting unit, that it is more likely than not that the fair value of the Medical reporting unit exceeds its carrying amount. Accordingly, there was no indication of impairment and the quantitative goodwill impairment test was not performed for the Medical reporting unit. The Company bypassed the qualitative analysis for its Non-Medical reporting unit and performed a quantitative analysis. The fair value of the Non-Medical reporting unit exceeded its carrying amount as of December 31, 2019.

Other Intangible Assets

Other intangible assets consist of purchased technology and patents, customer lists and trademarks. Definite-lived intangible assets are amortized on an accelerated or straight-line basis, which approximates the projected cash flows used to determine the fair value of those definite-lived intangible assets at the time of acquisition, as follows: purchased technology and patents 5-15 years; customer lists 7-20 years and other intangible assets 1-10 years. Certain trademark assets are considered indefinite-lived intangible assets and are not amortized. The Company expenses the costs incurred to renew or extend the term of intangible assets.

The Company reviews its definite-lived intangible assets for impairment when impairment indicators exist. When impairment indicators exist, the Company determines if the carrying value of its definite-lived intangible assets or asset groups exceeds the related undiscounted future cash flows. In cases where the carrying value exceeds the undiscounted future cash flows, the carrying value is written down to fair value. Fair value is generally determined using a discounted cash flow analysis.

(1.) SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

The Company assesses its indefinite-lived intangible assets for impairment periodically to determine if any adverse conditions exist that would indicate impairment or when impairment indicators exist. The Company assesses its indefinite-lived intangible assets for impairment at least annually by comparing the fair value of the indefinite-lived intangible asset to its carrying value. The fair value is determined using the relief from royalty method.

Refer to Note 6 “Goodwill and Other Intangible Assets, Net” for further details of the Company’s goodwill and other intangible assets.

Equity Investments

The Company holds long-term, strategic investments in companies to promote business and strategic objectives. These investments are included in Other Assets on the Consolidated Balance Sheets. Equity investments are measured and recorded as follows:

- **Non-marketable equity securities** are equity securities without readily determinable fair value that are measured and recorded at fair value with changes in fair value recognized within net income. The Company has elected the practicability exception to use an alternative that measures the securities at cost minus impairment, if any, plus or minus changes resulting from qualifying observable price changes. If an impairment is recognized on the Company’s non-marketable equity securities during the period, these assets are classified as Level 3 within the fair value hierarchy based on the nature of the fair value inputs.
- **Equity method investments** are equity securities in investees the Company does not control but over which it has the ability to exercise influence. Equity method investments are measured at cost minus impairment, if any, plus or minus our share of equity method investee income or loss.

Realized and unrealized gains and losses resulting from changes in fair value or the sale of these equity investments is recorded through (Gain) Loss on Equity Investments, Net. The carrying value of the Company’s non-marketable equity securities is adjusted for qualifying observable price changes resulting from the issuance of similar or identical securities by the same issuer. Determining whether an observed transaction is similar to a security within the Company’s portfolio requires judgment based on the rights and preferences of the securities. Recording upward and downward adjustments to the carrying value of the Company’s equity securities as a result of observable price changes requires quantitative assessments of the fair value of these securities using various valuation methodologies and involves the use of estimates.

Non-marketable equity securities and equity method investments (collectively referred to as non-marketable equity investments) are also subject to periodic impairment reviews. The Company’s quarterly impairment analysis considers both qualitative and quantitative factors that may have a significant impact on the investee's fair value. Qualitative factors considered include the investee's financial condition and business outlook, market for technology, operational and financing cash flow activities, technology and regulatory approval progress, and other relevant events and factors affecting the investee. When indicators of impairment exist, quantitative assessments of the fair value of the Company’s non-marketable equity investments are prepared.

To determine the fair value of these investments, the Company uses all pertinent financial information available related to the investees, including financial statements, market participant valuations from recent and proposed equity offerings, and other third-party data.

- **Non-marketable equity securities** are tested for impairment using a qualitative model similar to the model used for goodwill and long-lived assets. Upon determining that an impairment may exist, the security's fair value is calculated and compared to its carrying value and an impairment is recognized immediately if the carrying value exceeds the fair value.
- **Equity method investments** are subject to periodic impairment reviews using the other-than-temporary impairment model, which considers the severity and duration of a decline in fair value below cost and the Company’s ability and intent to hold the investment for a sufficient period of time to allow for recovery.

The Company has determined that its investments are not considered variable interest entities. The Company’s exposure related to these entities is limited to its recorded investment. These investments are in start-up research and development companies whose fair value is highly subjective in nature and subject to future fluctuations, which could be significant. Refer to Note 17 “Financial Instruments and Fair Value Measurements” for additional information on the Company’s equity investments.

(1.) SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

Debt Issuance Costs and Discounts

Debt issuance costs and discounts associated with the issuance of debt by the Company are deferred and amortized over the lives of the related debt. Debt issuance costs incurred in connection with the Company's issuance of its revolving credit facility are classified within Other Assets and amortized to Interest Expense on a straight-line basis over the contractual term of the revolving credit facility. Debt issuance costs and discounts related to the Company's term-debt are recorded as a reduction of the carrying value of the related debt and are amortized to Interest Expense using the effective interest method over the period from the date of issuance to the put option date (if applicable) or the maturity date, whichever is earlier. The amortization of debt issuance costs and discounts are included in Debt Related Charges Included in Interest Expense in the Consolidated Statements of Cash Flows. Upon prepayment of the related debt, the Company accelerates the recognition of a proportionate amount of the costs as refinancing or extinguishment of debt. Note 8 "Debt" contains additional information on the Company's debt issuance costs and discounts.

Income Taxes

The consolidated financial statements of the Company have been prepared using the asset and liability approach to account for income taxes, which requires the recognition of deferred income taxes for the expected future tax consequences of net operating losses, credits, and temporary differences between the financial statement carrying amounts and the tax bases of assets and liabilities. A valuation allowance is provided on deferred tax assets if it is determined, within each taxing jurisdiction, that it is more likely than not that the asset will not be realized.

The Company accounts for uncertain tax positions using a more likely than not recognition threshold. The evaluation of uncertain tax positions is based on factors including, but not limited to, changes in tax law, the measurement of tax positions taken or expected to be taken in tax returns, the effective settlement of matters subject to audit, new audit activity and changes in facts or circumstances related to a tax position. These tax positions are evaluated on a quarterly basis. The Company recognizes interest expense related to uncertain tax positions as Provision (Benefit) for Income Taxes. Penalties, if incurred, are recognized as a component of Selling, General and Administrative Expenses ("SG&A").

The Company and its subsidiaries file a consolidated U.S. federal income tax return. State tax returns are filed on a combined or separate basis depending on the applicable laws in the jurisdictions where the tax returns are filed. The Company also files foreign tax returns on a separate company basis in the countries in which it operates.

Derivative Financial Instruments

The Company recognizes all derivative financial instruments in its consolidated financial statements at fair value. Changes in the fair value of derivative instruments are recorded in earnings unless hedge accounting criteria are met. Under master agreements with the respective counterparties to our derivative contracts, subject to applicable requirements, we have the right of set-off and are allowed to net settle transactions of the same type with a single net amount payable by one party to the other. The Company designated its interest rate swaps and foreign currency forward contracts as cash flow hedges (refer to Note 17 "Financial Instruments and Fair Value Measurements"). Gains and losses on cash flow hedges are recorded in Accumulated Other Comprehensive Income in the Consolidated Balance Sheets until the underlying transaction is recorded in earnings. When the hedged item is realized, gains or losses are reclassified from Accumulated Other Comprehensive Income to the Consolidated Statement of Operations on the same line item as the underlying transaction. In the event the forecasted transactions do not occur, or it becomes probable that they will not occur, the Company reclassifies any gain or loss on the related cash flow hedge to earnings in the respective period. Cash flows related to these derivative financial instruments are included in cash flows from operating activities. The resulting cash flow from the termination of interest rate swap agreements is reported in cash flows from operations in the Consolidated Statements of Cash Flows.

Revenue Recognition

The majority of the Company's revenues consist of sales of various medical devices and products to large, multinational OEMs and their affiliated subsidiaries. The Company considers the customer's purchase order, which in some cases is governed by a long-term agreement, and the Company's corresponding sales order acknowledgment as the contract with the customer. Consideration payable to customers is included in the transaction price. The Company has elected to adopt the practical expedient provided in ASC 340-40-25-4 and recognize the incremental costs of obtaining a contract, which are primarily sales commissions, as expense when incurred because the amortization period is less than one year.

(1.) SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

The Company evaluates revenue recognition in contracts with customers as performance obligations are satisfied and the customer obtains control of the products. Control is defined as the ability to direct the use of and obtain substantially all of the remaining benefits of the products. The customer obtains control of the products when title and risk of ownership transfers to them, which is primarily based upon shipping terms. Most of the Company's revenues are recognized at the point in time when the products are shipped to customers. When contracts with customers for products that do not have an alternative use to the Company contain provisions that provide the Company with an enforceable right to payment for performance completed to date for costs incurred plus a reasonable profit throughout the duration of the contract, revenue is recognized over time as control is transferred to the customer. In contracts with customers where revenue is recognized over time, the Company uses an input measure to determine progress towards completion and total estimated costs at completion. Under this method, sales and gross profit are recognized as work is performed generally based on actual costs incurred. For arrangements recognized over time, the Company records a contract asset for unbilled revenue associated with non-cancellable customer orders, which is recorded within Contract Assets on the Consolidated Balance Sheets. Revenue is recognized net of sales tax, value-added taxes and other taxes.

Performance Obligations

The Company considers each shipment of an individual product included on a purchase order to be a separate performance obligation, as each shipment is separately identifiable and the customer can benefit from each individual product separately from the other products included on the purchase order. Accordingly, a contract can have one or more performance obligations to manufacture products. Standard payment terms range from 30 to 90 days and can include a discount for early payment.

The Company does not offer its customers a right of return. Rather, the Company warrants that each unit received by the customer will meet the agreed upon technical and quality specifications and requirements. Only when the delivered units do not meet these requirements can the customer return the non-compliant units as a corrective action under the warranty. The remedy offered to the customer is repair of the returned units or replacement if repair is not viable. Accordingly, the Company records a warranty reserve and any warranty activities are not considered to be a separate performance obligation.

Contract Balances

The timing of revenue recognition, billings and cash collections results in billed accounts receivable and less frequently, unearned revenue. Accounts receivable are recorded when the right to consideration becomes unconditional. Unearned revenue is recorded when customers pay or are billed in advance of the Company's satisfaction of performance obligations. Contract liabilities are classified as Accrued Expenses and Other Current Liabilities on the Consolidated Balance Sheets.

Transaction Price

Generally, the transaction price of the Company's contracts consists of a unit price for each individual product included in the contract, which can be fixed or variable based on the number of units ordered. In some instances, the transaction price also includes a rebate for meeting certain volume-based targets over a specified period of time. The transaction price of a contract is determined based on the unit price and the number of units ordered, reduced by the rebate expected to be earned on those units. Rebates are estimated based on the expected achievement of the volume-based target using the most likely amount method and updated quarterly. Any adjustments to these estimates are recognized under the cumulative catch-up method, such that impact of the adjustment is recognized in the period in which it is identified. When contracts with customers include consideration payable at the beginning of the contract, the transaction price is reduced at the later of when the Company recognizes revenue for the transfer of the related goods to the customer or when we pay or promise to pay the consideration. Volume discounts and rebates and other pricing concessions earned by customers are offset against their receivable balances.

The transaction price is allocated to each performance obligation on a relative standalone selling price basis. As the majority of products sold to customers are manufactured to meet the specific requirements and technical specifications of that customer, the products are considered unique to that customer and the unit price stated in the contract is considered the standalone selling price.

The Company has elected to adopt the practical expedient provided in ASC 606-10-50-14 and not disclose the aggregate amount of the transaction price allocated to unsatisfied performance obligations and an expectation of when those amounts are expected to be recognized as revenue because the majority of contracts have an original expected duration of one year or less.

Contract Modifications

Contract modifications, which can include a change in scope, price, or both, most often occur related to contracts that are governed by a long-term arrangement. Contract modifications typically relate to the same products already governed by the long-term arrangement, and therefore, are accounted for as part of the existing contract. If a contract modification is for additional products, it is accounted for as a separate contract.

(1.) SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

Environmental Costs

Environmental expenditures that relate to an existing condition caused by past operations and that do not provide future benefits are expensed as incurred. Liabilities are recorded when environmental assessments are made, the requirement for remedial efforts is probable and the amount of the liability can be reasonably estimated. Liabilities are recorded generally no later than the completion of feasibility studies. The Company has a process in place to monitor, identify, and assess how the current activities for known exposures are progressing against the recorded liabilities. The process is also designed to identify other potential remediation sites that are not presently known.

Restructuring Expenses

The Company continually evaluates alternatives to align the business with the changing needs of its customers and to lower operating costs. This includes realignment of existing manufacturing capacity, facility closures, or similar actions, either in the normal course of business or pursuant to significant restructuring programs. These actions may result in voluntary or involuntary employee termination benefits. Voluntary termination benefits are accrued when an employee accepts the related offer. Involuntary termination benefits are accrued upon the commitment to a termination plan and the benefit arrangement is communicated to affected employees, or when liabilities are determined to be probable and estimable, depending on the existence of a substantive plan for severance or termination. All other exit costs are expensed as incurred. Refer to Note 11 “Other Operating Expenses” for additional information.

Product Warranties

The Company allows customers to return defective or damaged products for credit, replacement, or repair. The Company warrants that its products will meet customer specifications and will be free from defects in materials and workmanship**.** The Company accrues its estimated exposure to warranty claims, through Cost of Sales, based upon experience and other specific information as it becomes available. The product warranty liability is classified as Accrued Expenses and Other Current Liabilities on the Consolidated Balance Sheets. Adjustments to pre-existing estimated exposure for warranties are made as changes to the obligations become reasonably estimable. Note 13 “Commitments and Contingencies” contains additional information on the Company’s product warranties.

Research, Development and Engineering Costs (“RD&E”)

RD&E costs are expensed as incurred. The primary costs are salary and benefits for personnel, material costs used in development projects and subcontracting costs.

Stock-Based Compensation

The Company recognizes stock-based compensation expense for its compensation plans. These plans include stock options, restricted stock awards (“RSAs”), restricted stock units (“RSUs”) and performance-based restricted stock units (“PRSUs”). For the Company's PRSUs, in addition to service conditions, the ultimate number of shares to be earned depends on the achievement of targets based on market conditions, such as total shareholder return, or performance conditions based on the Company’s operating results. The Company records forfeitures of equity awards in the period in which they occur.

The fair value of the stock-based compensation is determined at the grant date. The Company uses the Black-Scholes standard option pricing model (“Black-Scholes model”) to determine the fair value of stock options. The fair value of each RSU and RSA is determined based on the Company's closing stock price on the date of grant. The fair value of each PRSU is determined based on either the Company's closing stock price on the date of grant or through a Monte Carlo simulation valuation model (“Monte Carlo model”) for those awards that include a market-based condition. In addition to the closing stock price on the date of grant, the determination of the fair value of awards using both the Black-Scholes and Monte Carlo models is affected by other assumptions, including the following:

Expected Term - The Company analyzes historical employee exercise and termination data to estimate the expected term assumption for stock options. For market-based awards, the term is commensurate with the performance period remaining as of the grant date.
Risk-free Interest Rate - A risk-free rate is based on the U.S. Treasury rates in effect on the grant date for a maturity equal to or approximating the expected term of the award.
Expected Volatility - For stock options, expected volatility is calculated using historical volatility based on the daily closing prices of the Company's common stock over a period equal to the expected term. For market-based awards, a combination of historical and implied volatilities for the Company and members of its peer group are used in developing the expected volatility assumption.
Dividend Yield - The dividend yield assumption is based on the Company’s history and the expected annual dividend yield on the grant date.

(1.) SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

The Company recognizes compensation expense over the required service or vesting period based on the fair value of the award on the date of grant. Certain executive stock-based awards contain market, performance and service conditions. Compensation expense for awards with market conditions is recognized over the service period and is not reversed if the market condition is not met. Compensation expense for awards with performance conditions is reassessed each reporting period and recognized based upon the probability that the performance targets will be achieved.

All stock option awards granted under the Company's compensation plans have an exercise price equal to the closing stock price on the date of grant, a ten-year contractual life and generally, vest annually over a three-year vesting term. RSUs typically vest in equal annual installments over a three or four year period. RSUs issued to members of the Company's Board of Directors as a portion of their annual retainer vest quarterly over a one-year vesting term. Earned PRSUs typically vest two or three years from the date of grant.

The Company records deferred tax assets for awards that result in deductions on the Company's income tax returns, based on the amount of stock-based compensation expense recognized and the statutory tax rate in the jurisdiction in which it will receive a deduction. Differences between the deferred tax assets recognized for financial reporting purposes and the actual tax deduction reported on the income tax return are recorded as a component of Provision (Benefit) for Income Taxes in the Consolidated Statements of Operations. Note 10 "Stock-Based Compensation" contains additional information on the Company's stock-based compensation.

Foreign Currency Translation and Remeasurement

The Company translates all assets and liabilities of its foreign subsidiaries, where the U.S. dollar is not the functional currency, at the period-end exchange rate and translates income and expenses at the average exchange rates in effect during the period. The net effect of this translation is recorded in the consolidated financial statements as a component of Accumulated Other Comprehensive Income. Translation adjustments are not adjusted for income taxes as they relate to permanent investments in the Company's foreign subsidiaries.

The Company has foreign operations in Ireland, Israel, Malaysia, Mexico, Switzerland, and Uruguay, which expose the Company to foreign currency exchange rate fluctuations due to transactions denominated in Euros, Israeli shekel, Malaysian ringgits, Mexican pesos, Swiss francs, and Uruguayan pesos. To the extent that monetary assets and liabilities, including short-term and long-term intercompany loans, are recorded in a currency other than the functional currency of the subsidiary, these amounts are remeasured each period at the period-end exchange rate, with the resulting gain or loss being recorded in Other (Income) Loss, Net in the Consolidated Statements of Operations. Net foreign currency transaction losses included in Other (Income) Loss, Net amounted to $0.1 million, $1.6 million and $10.9 million for 2019, 2018 and 2017, respectively, and primarily related to the remeasurement of intercompany loans and the fluctuation of the U.S. dollar relative to the Euro.

Defined Benefit Plans

The Company recognizes in its balance sheet as an asset or liability the overfunded or underfunded status of its defined benefit plans provided to its employees located in Mexico and Switzerland. This asset or liability is measured as the difference between the fair value of plan assets, if any, and the benefit obligation of those plans. For these plans, the benefit obligation is the projected benefit obligation, which is calculated based on actuarial computations of current and future benefits for employees. Actuarial gains or losses and prior service costs or credits that arise during the period, but are not included as components of net periodic benefit expense, are recognized as a component of Accumulated Other Comprehensive Income. The Company records the service cost component of net benefit costs in Cost of Sales and SG&A Expenses. The interest cost component of net benefit costs is recorded in Interest Expense and the remaining components of net benefit costs, amortization of net losses and expected return on plan assets, are recorded in Other (Income) Loss, Net.

Earnings Per Share ("EPS")

Basic EPS is calculated by dividing Net Income (Loss) by the weighted average number of shares outstanding during the period. Diluted EPS is calculated by adjusting the weighted average number of shares outstanding for potential common shares if dilutive to the EPS calculation. Note 15 "Earnings Per Share" contains additional information on the computation of the Company's EPS.

(1.) SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

Comprehensive Income

The Company's comprehensive income as reported in the Consolidated Statements of Comprehensive Income includes net income, foreign currency translation adjustments, the net change in cash flow hedges, net of tax, and defined benefit plan liability adjustments, net of tax. The Consolidated Statements of Comprehensive Income and Note 16 "Stockholders' Equity" contain additional information on the computation of the Company's comprehensive income.

Recent Accounting Pronouncements

In the normal course of business, management evaluates all new Accounting Standards Updates ("ASU") and other accounting pronouncements issued by the Financial Accounting Standards Board ("FASB"), Securities and Exchange Commission ("SEC"), or other authoritative accounting bodies to determine the potential impact they may have on the Company's Consolidated Financial Statements. Except as noted below, management does not expect any of the recently issued accounting pronouncements, which have not already been adopted, to have a material impact on the Company's Consolidated Financial Statements.

Accounting Guidance Adopted in Fiscal Year 2019

Adoption of ASC Topic 842

The Company adopted ASC 842, *Leases,* effective December 29, 2018, the first day of the Company's 2019 fiscal year. ASC 842 requires the recognition of lease assets and lease liabilities by lessees for those leases classified as operating leases under previous guidance. The Company elected to transition to ASC 842 using the option to not restate comparative periods and apply the standard as of the date of initial application. In addition, certain practical expedients were elected which permit the Company to not reassess whether existing contracts are or contain leases, to not reassess the lease classification of any existing leases, and to not reassess initial direct costs for any existing leases. The Company also elected the practical expedient to not separate lease and non-lease components for all classes of underlying assets and the practical expedient related to land easements, allowing the Company to carry-forward its accounting treatment for land easements on existing agreements. The Company did not elect the practical expedient pertaining to the use of hindsight. The Company also made an accounting policy election to keep leases with an initial term of 12 months or less and no purchase option the Company is reasonably certain to exercise off the balance sheet for all classes of underlying assets.

As a result of the adoption of ASC 842, the Company recognized operating lease right-of-use assets of $40.9 million and operating lease liabilities of $43.4 million on December 29, 2018. The difference between the lease assets and lease liabilities primarily represents the existing prepaid rent assets, deferred rent liabilities, and tenant improvement allowances, along with a cumulative-effect adjustment to beginning retained earnings. The adoption of ASC 842 did not have a material impact on the Company's Consolidated Statement of Operations and Consolidated Statement of Cash Flows for the periods presented.

Refer to Note 14 "Leases" for additional information on the Company's leases.

Adoption of ASU 2017-12

In August 2017, the FASB issued ASU 2017-12, *Derivatives and Hedging (Topic 815): Targeted Improvements to Accounting for Hedging Activities*. ASU 2017-12 amends the designation and measurement guidance for qualifying hedging transactions and the presentation of hedge results in an entity's financial statements. The new guidance removes the concept of separately measuring and reporting hedge ineffectiveness and requires a company to present the earnings effect of the hedging instrument, including any ineffectiveness, in the same income statement line item in which the earnings effect of the hedged item is reported.

ASU 2017-12 continues to allow an entity to exclude the time value of options and forward points from the assessment of hedge effectiveness. For excluded components in cash flow hedges, the base recognition model under this ASU is an amortization approach. An entity still may elect to record changes in the fair value of the excluded component currently in earnings; however, such an election will need to be applied consistently to similar hedges. The Company has elected to continue to record changes in the fair value of the excluded components of its derivative instruments currently in earnings given their highly effective nature.

The Company adopted ASU 2017-12 on December 29, 2018, the first day of the Company's 2019 fiscal year, which did not materially affect the Company's results of operations. The Company adopted the guidance on the modified retrospective basis and did not recognize a cumulative effect adjustment upon adoption as the Company had not recognized ineffectiveness on any of the hedging instruments existing as of the date of adoption. Refer to Note 17 "Financial Instruments and Fair Value Measurements" for additional information and disclosures of the Company's derivatives and hedging activities.

(1.) SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (Continued)

Recent Accounting Pronouncements Not Yet Effective

In June 2016, the FASB issued ASU 2016-13, *Financial Instruments-Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments*, which replaces the current incurred loss impairment methodology for most financial assets with the current expected credit loss ("CECL") methodology. Under the CECL method, the Company will be required to immediately recognize an estimate of credit losses expected to occur over the life of the financial asset at the time financial asset is originated or acquired. Estimated credit losses are determined by taking into consideration historical loss conditions, current conditions and reasonable and supportable forecasts. Changes to the expected lifetime credit losses are required to be recognized each period. The standard was effective for the Company on January 1, 2020 and will be adopted using a modified retrospective transition method through a cumulative-effect adjustment to retained earnings. The Company does not expect the new credit loss standard to have a material impact to the Consolidated Financial Statements.

(2.) ACQUISITION, DIVESTITURE AND DISCONTINUED OPERATIONS

Acquisition of Assets from US BioDesign, LLC

On October 7, 2019, the Company acquired certain assets of US BioDesign, LLC, ("USB") a privately held developer and manufacturer of complex braided biomedical structures for disposable and implantable medical devices. The acquisition adds a differentiated capability related to the complex development and manufacture of braided and formed biomedical structures to the Company's broad portfolio. The fair value of the consideration transferred was $19.2 million, which included an initial cash payment of $15.0 million and $4.2 million in estimated fair value of contingent consideration. The contingent consideration represents the estimated fair value of the Company's obligation, under the acquisition agreement, to make additional payments of up to $5.5 million if certain revenue goals are met through 2023. Based on the preliminary purchase price allocation, the assets acquired principally consist of $7.4 million of technology, $10.5 million of goodwill, $0.7 million of acquired property plant and equipment, and $0.6 million of other working capital items. The technology intangible asset is being amortized over a useful life of 8 years. The fair value of the contingent consideration was estimated using the Monte Carlo valuation approach. See Note 17 "Financial Instruments and Fair Value Measurements" for additional information related to the fair value measurement of the contingent consideration. Goodwill arising from the acquisition is tax deductible.

The operating results of this acquisition are included in our consolidated financial statements beginning on the date of acquisition. For the year ended December 31, 2019, sales related to USB were $0.8 million. Earnings related to the operations consisting of the assets acquired from USB for the year ended December 31, 2019 were not material. Direct costs of the acquisition of $0.4 million were expensed as incurred and were included in Other Operating Expenses in the Consolidated Statement of Operations for the year ended December 31, 2019. Pro forma information for the acquisition is not presented as the operations of the acquired business are not material to the overall operations of the Company. The acquired assets and operations are reported in the Company's Medical segment.

Discontinued Operations and Divestiture of AS&O Product Line

On May 3, 2018, the Company entered into a definitive agreement to sell its AS&O Product Line to Viant, and on July 2, 2018, completed the sale, collecting cash proceeds of approximately $581 million, which is net of transaction costs and adjustments set forth in the definitive purchase agreement. In connection with the sale, the parties executed a transition services agreement whereby the Company will provide certain corporate services (including accounting, payroll, and information technology services) to Viant for a period of up to one year from the date of the closing to facilitate an orderly transfer of business operations. Viant paid Integer for these services as specified in the transition services agreement, which services were completed during 2019. The Company recognized $2.9 million of income under the transition services agreement for the performance of services during 2019, of which $0.1 million is recorded as a reduction of Cost of Sales and $2.8 million is recorded as a reduction of SG&A Expenses in the Consolidated Statement of Operations for the year ended December 31, 2019. The Company recognized $3.6 million of income under the transition services agreement for the performance of services during 2018, of which $0.2 million is recorded as a reduction of Cost of Sales and $3.4 million is recorded as a reduction of SG&A Expenses in the Consolidated Statement of Operations for the year ended December 28, 2018. In addition, the parties executed long-term supply agreements under which the Company and Viant have agreed to supply the other with certain products at prices specified in the agreements for a term of three years.

In connection with the closing of the transaction but prior to a net working capital adjustment, the Company recognized a pre-tax gain on sale of discontinued operations of $195.0 million during the year ended December 28, 2018. During 2019, the Company received, and recognized as gain on sale from discontinued operations, $4.8 million due to the final net working capital adjustment agreed to with Viant.

(2.) ACQUISITION, DIVESTITURE AND DISCONTINUED OPERATIONS (Continued)

As the AS&O Product Line was a portion of the Medical goodwill reporting unit, and management determined it met the definition of a business, goodwill totaling $150.4 million was allocated to the AS&O Product Line on a relative fair value basis. The fair value of the AS&O Product Line assets was based primarily on the purchase price of $600 million prior to closing adjustments.

Income (loss) from discontinued operations for fiscal years 2019, 2018 and 2017 were as follows (in thousands):

	2019	2018	2017
Sales	$ —	$ 178,020	$ 325,841
Cost of sales	—	148,357	286,300
Gross profit	—	29,663	39,541
SG&A expenses	—	8,905	18,500
Research, development and engineering costs	—	2,352	6,397
Other operating expenses	—	1,805	854
Interest expense	—	22,833	42,488
Gain on sale of discontinued operations	(4,974)	(194,965)	—
Other (income) loss, net	(322)	420	(1,266)
Income (loss) from discontinued operations before taxes	5,296	188,313	(27,432)
Provision (benefit) for income taxes	178	67,382	(7,024)
Income (loss) from discontinued operations	$ 5,118	$ 120,931	$ (20,408)

Interest expense included in discontinued operations reflects an estimate of interest expense related to the debt that was required to be repaid with the proceeds from the sale of the AS&O Product Line.

Cash flow information from discontinued operations for fiscal years 2019, 2018 and 2017 was as follows (in thousands):

	2019	2018	2017
Cash provided by (used in) operating activities	$ (78)	$ (12,498)	$ 3,167
Cash provided by (used in) investing activities	4,734	577,833	(16,771)
Depreciation and amortization	$ —	$ 7,450	$ 21,613
Capital expenditures	—	3,610	16,844

Acquisition of Assets from InoMec Ltd.

On February 19, 2020, the Company acquired certain assets of InoMec Ltd., a privately held company based in Israel that specializes in the research, development and manufacturing of medical devices, including minimally invasive tools, delivery systems, tubing and catheters, surgery tools, drug-device combination, laser combined devices, and tooling and production. The acquisition enables the Company to create a research and development center in the region, and adds catheter assembly capabilities to its portfolio.

The Company paid $5 million in cash and may pay up to an additional $3.5 million of contingent earn out over the next four years based on specified conditions being met. The Company expects to determine the preliminary purchase price allocation prior to the end of the first quarter of 2020.

(3.) SUPPLEMENTAL CASH FLOW INFORMATION

The following represents supplemental cash flow information for fiscal years 2019, 2018 and 2017 (in thousands):

	2019	2018	2017
Non-cash investing and financing activities:			
Property, plant and equipment purchases included in accounts payable	$ 8,646	$ 2,303	$ 3,474
Cash paid (refunded) during the year for:			
Interest	44,784	79,661	93,839
Income taxes	30,034	23,155	(8,185)

(4.) INVENTORIES

Inventories comprise the following (in thousands):

	December 31, 2019	December 28, 2018
Raw materials	$ 79,742	$ 80,213
Work-in-process	60,042	75,711
Finished goods	27,472	34,152
Total	$ 167,256	$ 190,076

(5.) PROPERTY, PLANT AND EQUIPMENT, NET

PP&E comprises the following (in thousands):

	December 31, 2019	December 28, 2018
Manufacturing machinery and equipment	$ 285,793	$ 261,912
Buildings and building improvements	96,539	95,886
Information technology hardware and software	64,328	60,901
Leasehold improvements	69,012	61,418
Furniture and fixtures	15,517	15,082
Land and land improvements	11,541	11,544
Construction work in process	37,470	23,886
Other	1,181	1,048
	581,381	531,677
Accumulated depreciation	(335,196)	(300,408)
Total	$ 246,185	$ 231,269

Depreciation expense for PP&E was as follows for fiscal years 2019, 2018 and 2017 (in thousands):

	2019	2018	2017
Depreciation expense	$ 37,819	$ 40,078	$ 38,077

(6.) GOODWILL AND OTHER INTANGIBLE ASSETS, NET

Goodwill

The change in the carrying amount of goodwill by reportable segment during fiscal years 2019 and 2018 was as follows (in thousands):

	Medical	Non-Medical	Total
December 29, 2017	$ 822,870	$ 17,000	$ 839,870
Foreign currency translation	(7,532)	—	(7,532)
December 28, 2018	815,338	17,000	832,338
Goodwill related to acquisition (Note 2)	10,527	—	10,527
Foreign currency translation	(3,248)	—	(3,248)
December 31, 2019	$ 822,617	$ 17,000	$ 839,617

As of December 31, 2019, no accumulated impairment loss has been recognized for the goodwill allocated to the Company's Medical or Non-Medical segments.

Intangible Assets

Intangible assets comprise the following (in thousands):

	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
December 31, 2019			
Definite-lived:			
Purchased technology and patents	$ 248,264	$ (138,435)	$ 109,829
Customer lists	706,852	(131,185)	575,667
Other	3,503	(3,503)	—
Total amortizing intangible assets	$ 958,619	$ (273,123)	$ 685,496
Indefinite-lived:			
Trademarks and tradenames			$ 90,288
December 28, 2018			
Definite-lived:			
Purchased technology and patents	$ 241,726	$ (125,540)	$ 116,186
Customer lists	710,406	(104,556)	605,850
Other	3,503	(3,489)	14
Total amortizing intangible assets	$ 955,635	$ (233,585)	$ 722,050
Indefinite-lived:			
Trademarks and tradenames			$ 90,288

See Note 2 "Acquisition, Divestiture and Discontinued Operations." for additional details regarding intangible assets acquired during 2019. Included in the Company's indefinite-lived intangible assets is the Lake Region Medical tradename with a carrying value of $70.0 million.

(6.) GOODWILL AND OTHER INTANGIBLE ASSETS, NET (Continued)

Aggregate intangible asset amortization expense is comprised of the following for fiscal years 2019, 2018 and 2017 (in thousands):

	2019	2018	2017
Cost of Sales	$ 13,111	$ 14,134	$ 15,183
SG&A	26,965	26,658	24,840
RD&E	—	154	545
Other Operating Expenses ("OOE")	—	514	2,538
Total intangible asset amortization expense	$ 40,076	$ 41,460	$ 43,106

Estimated future intangible asset amortization expense based upon the carrying value as of December 31, 2019 is as follows (in thousands):

	2020	2021	2022	2023	2024	After 2024
Amortization Expense	$ 40,438	$ 39,898	$ 39,161	$ 37,755	$ 36,798	$ 491,446

(7.) ACCRUED EXPENSES AND OTHER CURRENT LIABILITIES

Accrued expenses and other current liabilities are comprised of the following (in thousands):

	December 31, 2019	December 28, 2018
Profit sharing and bonuses	$ 26,060	$ 22,912
Salaries and benefits	20,997	21,830
Deferred revenue	1,975	2,482
Product warranties	1,933	2,600
Accrued interest	1,885	1,944
Other	13,223	8,722
Total	$ 66,073	$ 60,490

(8.) DEBT

Long-term debt is comprised of the following (in thousands):

	December 31, 2019	December 28, 2018
Senior secured term loan A	$ 267,188	$ 304,687
Senior secured term loan B	558,286	632,286
Revolving line of credit	—	5,000
Unamortized discount on term loan B and debt issuance costs	(10,702)	(16,466)
Total debt	814,772	925,507
Current portion of long-term debt	(37,500)	(37,500)
Total long-term debt	$ 777,272	$ 888,007

Senior Secured Credit Facilities

The Company has senior secured credit facilities (the "Senior Secured Credit Facilities") consisting of (i) a $200 million revolving credit facility (the "Revolving Credit Facility"), (ii) a $267 million term loan A facility (the "TLA Facility"), and (iii) a $558 million term loan B facility (the "TLB Facility"). The TLA Facility and TLB Facility are collectively referred to as the "Term Loan Facilities." The TLB Facility was issued at a 1% discount.

(8.) DEBT (Continued)

On November 21, 2019, the Company amended the Senior Secured Credit Facilities to extend the maturity dates for both the Revolving Credit Facility and the TLA Facility to coincide with the maturity date of the TLB Facility, and reduce the interest rate margins applicable to the Revolving Credit Facility, TLA Facility and TLB Facility.

Revolving Credit Facility

The Revolving Credit Facility matures on October 27, 2022. The Revolving Credit Facility includes a $15 million sublimit for swingline loans and a $25 million sublimit for standby letters of credit. The Company is required to pay a commitment fee on the unused portion of the Revolving Credit Facility, which will range between 0.175% and 0.25%, depending on the Company's Total Net Leverage Ratio (as defined in the Senior Secured Credit Facilities agreement). Interest rates on the Revolving Credit Facility, as well as the TLA Facility, are at the Company's option, either at: (i) the prime rate plus the applicable margin, which will range between 0.50% and 2.00%, based on the Company's Total Net Leverage Ratio, or (ii) the applicable London Interbank Offered Rate ("LIBOR") rate plus the applicable margin, which will range between 1.50% and 3.00%, based on the Company's Total Net Leverage Ratio.

As of December 31, 2019, the Company had no outstanding borrowings on the Revolving Credit Facility and an available borrowing capacity of $193.2 million after giving effect to $6.8 million of outstanding standby letters of credit.

Subject to certain conditions, commitments under the Revolving Credit Facility may be increased through an incremental revolving facility so long as, on a pro forma basis, the Company's first lien net leverage ratio does not exceed 4.25:1.00.

Term Loan Facilities

The TLA Facility and TLB Facility mature on October 27, 2022. Interest rates on the TLB Facility are, at the Company's option, either at: (i) the prime rate plus 1.50% or (ii) the applicable LIBOR rate plus 2.50%, with LIBOR subject to a 1.00% floor. As of December 31, 2019, the interest rates on the TLA Facility and TLB Facility were 3.80% and 4.22%, respectively.

Subject to certain conditions, one or more incremental term loan facilities may be added to the Term Loan Facilities so long as, on a pro forma basis, the Company's first lien net leverage ratio does not exceed 4.25:1.00.

Covenants

The Revolving Credit Facility and the TLA Facility contain covenants requiring (A) a maximum total net leverage ratio of 4.50:1.0, subject to step downs of 25 basis points in both the first and second quarters of 2020 and (B) a minimum interest coverage ratio of adjusted EBITDA (as defined in the Senior Secured Credit Facilities) to interest expense of not less than 3.00:1.00. As of December 31, 2019, the Company was in compliance with these financial covenants. The TLB Facility does not contain any financial maintenance covenants.

The Senior Secured Credit Facilities also contain negative covenants that restrict the Company's ability to (i) incur additional indebtedness; (ii) create certain liens; (iii) consolidate or merge; (iv) sell assets, including capital stock of the Company's subsidiaries; (v) engage in transactions with the Company's affiliates; (vi) create restrictions on the payment of dividends or other amounts from the Company's restricted subsidiaries; (vii) pay dividends on capital stock or redeem, repurchase or retire capital stock; (viii) pay, prepay, repurchase or retire certain subordinated indebtedness; (ix) make investments, loans, advances and acquisitions; (x) make certain amendments or modifications to the organizational documents of the Company or its subsidiaries or the documentation governing other senior indebtedness of the Company; and (xi) change the Company's type of business. These negative covenants are subject to a number of limitations and exceptions that are described in the Senior Secured Credit Facilities agreement. As of December 31, 2019, the Company was in compliance with all negative covenants under the Senior Secured Credit Facilities.

The Senior Secured Credit Facilities provide for customary events of default. Upon the occurrence and during the continuance of an event of default, the outstanding advances and all other obligations under the Senior Secured Credit Facilities become immediately due and payable.

(8.) DEBT (Continued)

9.125% Senior Notes due 2023

On October 27, 2015, the Company completed a private offering of $360 million aggregate principal amount of 9.125% senior notes due on November 1, 2023 (the "Senior Notes"). On July 10, 2018, the Company completed the redemption in full of the Senior Notes at a redemption price of 100% of the principal amount of the Senior Notes plus the applicable "make-whole" premium of $31.3 million and accrued and unpaid interest through the redemption date. The "make-whole" premium is included in Interest Expense in the accompanying Consolidated Statements of Operations for the year ended December 28, 2018. Upon completion of the redemption of the Senior Notes, the indenture governing the Senior Notes was satisfied and discharged.

As of December 31, 2019, the weighted average interest rate on all outstanding borrowings is 4.08%.

Contractual maturities of the Company's debt facilities for the next five years and thereafter, excluding any discounts or premiums, as of December 31, 2019 are as follows (in thousands):

	2020	2021	2022
Future minimum principal payments	$ 37,500	$ 37,500	$ 750,474

Debt Issuance Costs and Discounts

The Company incurred debt issuance costs in conjunction with the issuance of the Senior Secured Credit Facilities and the Senior Notes. The change in deferred debt issuance costs related to the Company's Revolving Credit Facility is as follows (in thousands):

December 29, 2017	$ 2,808
Amortization during the period	(991)
December 28, 2018	1,817
Financing costs incurred	302
Write-off of debt issuance costs[(1)]	(150)
Amortization during the period	(939)
December 31, 2019	$ 1,030

The change in unamortized discount and debt issuance costs related to the Term Loan Facilities and Senior Notes is as follows (in thousands):

	Debt Issuance Costs	Unamortized Discount on TLB Facility	Total
December 29, 2017	$ 26,889	$ 6,389	$ 33,278
Write-off of debt issuance costs and unamortized discount[(1)]	(9,757)	(1,610)	(11,367)
Amortization during the period	(4,419)	(1,026)	(5,445)
December 28, 2018	12,713	3,753	16,466
Financing costs incurred	919	—	919
Write-off of debt issuance costs and unamortized discount[(1)]	(1,913)	(482)	(2,395)
Amortization during the period	(3,440)	(848)	(4,288)
December 31, 2019	$ 8,279	$ 2,423	$ 10,702

(1) The Company recognized losses from extinguishment of debt in connection with prepaying portions of its TLB Facility during 2019 and 2018, amending the Senior Secured Credit Facilities during 2019, and redeeming its Senior Notes during 2018. The losses from extinguishment of debt are included in Interest Expense in the accompanying Consolidated Statements of Operations.

(9.) BENEFIT PLANS

Savings Plan

The Company sponsors a defined contribution 401(k) plan (the "Plan"), for its U.S. based employees. The Plan provides for the deferral of employee compensation under Internal Revenue Code §401(k) and a Company match.

The Company matches $0.50 per dollar of participant deferral, up to 6% of the compensation of each participant. Contributions from employees, as well as those matched by the Company, vest immediately. Net costs related to defined contribution plans were $7.2 million in 2019, $6.8 million in 2018 and $6.0 million in 2017.

Defined Benefit Plans

The Company is required to provide its employees located in Switzerland and Mexico certain statutorily mandated defined benefits. Under these plans, benefits accrue to employees based upon years of service, position, age and compensation. The defined benefit pension plan provided to the Company's employees located in Switzerland is a funded contributory plan, while the plans that provide benefits to the Company's employees located in Mexico are unfunded and noncontributory. The assets of the Switzerland plan are held at an AA- rated insurance carrier who bears the pension risk and longevity risk, and will be used to cover the pension liability for the remaining retirees of the Swiss plan, as well as the remaining employees at that location. The liability and corresponding expense related to these benefit plans is based on actuarial computations of current and future benefits for employees.

The aggregated projected benefit obligation for these plans was $3.0 million and $2.2 million as of December 31, 2019 and December 28, 2018, respectively. Net periodic pension cost for fiscal years 2019, 2018 and 2017 was $0.3 million, $0.3 million and $0.3 million, respectively. Over the next ten years, we expect gross benefit payments to be $0.7 million in total for the years 2020 through 2024, and $1.1 million in total for the years 2025 through 2029.

(10.) STOCK-BASED COMPENSATION

Stock-based Compensation Plans

The Company maintains certain stock-based compensation plans that were approved by the Company's stockholders and are administered by the Board of Directors, or the Compensation and Organization Committee of the Board. The stock-based compensation plans provide for the granting of stock options, RSAs, RSUs, stock appreciation rights and stock bonuses to employees, non-employee directors, consultants, and service providers.

The 2011 Stock Incentive Plan (the "2011 Plan"), as amended, authorizes the issuance of up to 1,350,000 shares of equity incentive awards and the 2016 Stock Incentive Plan (the "2016 Plan") authorizes the issuance of up to 1,450,000 shares of equity incentive awards. Awards remain outstanding under the 2005 Stock Incentive Plan and the 2009 Stock Incentive Plan, as amended, but the plans have been frozen to any new award issuances. As of December 31, 2019, there were 662,736 and 79,316 shares available for future grants under the 2016 Plan and 2011 Plan, respectively.

The Company recognized a net tax benefit from the exercise of stock options and vesting of restricted stock and restricted stock units of $2.8 million, $3.8 million and $1.9 million for 2019, 2018 and 2017, respectively. These amounts are recorded as a component of Provision (Benefit) for Income Taxes.

(10.) STOCK-BASED COMPENSATION (Continued)

Stock-based Compensation Expense

The components and classification of stock-based compensation expense for fiscal years 2019, 2018 and 2017 were as follows (in thousands):

	2019	2018	2017
Stock options	$ 410	$ 873	$ 1,633
RSAs and RSUs	8,884	9,183	11,819
Stock-based compensation expense - continuing operations	9,294	10,056	13,452
Discontinued operations	—	414	1,228
Total stock-based compensation expense	$ 9,294	$ 10,470	$ 14,680
Cost of sales	$ 1,011	$ 849	$ 748
SG&A	7,827	9,090	9,893
RD&E	269	112	642
OOE	187	5	2,169
Discontinued operations	—	414	1,228
Total stock-based compensation expense	$ 9,294	$ 10,470	$ 14,680

During 2017, the Company recorded $2.2 million of accelerated stock-based compensation expense in connection with the transition of its former Chief Executive Officer per the terms of his contract, which was classified as OOE.

Stock Options

There were no stock options granted in fiscal year 2019. The following table includes the weighted average grant date fair value of stock options granted to employees during fiscal years 2018 and 2017 and the related weighted average assumptions used in the Black-Scholes model:

	2018	2017
Weighted average fair value of options granted	$ 14.89	$ 12.86
Assumptions:		
Expected term (in years)	4.0	4.5
Risk-free interest rate	2.21%	1.77%
Expected volatility	39%	37%
Expected dividend yield	0%	0%

The following table summarizes stock option activity during the fiscal year ended December 31, 2019:

	Number of Stock Options	Weighted Average Exercise Price	Weighted Average Remaining Contractual Term (in years)	Aggregate Intrinsic Value (in millions)
Outstanding at December 28, 2018	522,783	$ 31.88		
Exercised	(138,770)	23.36		
Outstanding at December 31, 2019	384,013	$ 34.96	5.1	$ 17.5
Vested and expected to vest at December 31, 2019	384,013	$ 34.96	5.1	$ 17.5
Exercisable at December 31, 2019	349,698	$ 34.55	4.9	$ 21.8

(10.) STOCK-BASED COMPENSATION (Continued)

Intrinsic value is calculated for in-the-money options (exercise price less than market price) as the difference between the market price of the Company's common shares as of December 31, 2019 ($80.43) and the weighted average exercise price of the underlying stock options, multiplied by the number of options outstanding and/or exercisable. As of December 31, 2019, $0.1 million of unrecognized compensation cost related to non-vested stock options is expected to be recognized over a weighted-average period of 0.9 years. Shares are distributed from the Company's authorized but unissued reserve and treasury stock upon the exercise of stock options.

The following table provides certain information relating to the exercise of stock options during fiscal years 2019, 2018 and 2017 (in thousands):

	2019	2018	2017
Intrinsic value	$ 7,998	$ 17,722	$ 13,928
Cash received	3,242	12,409	19,324

Restricted Stock Awards and Restricted Stock Units

The following table summarizes time-vested RSA and RSU activity during the fiscal year ended December 31, 2019:

	Time-Vested Activity	Weighted Average Grant Date Fair Value
Nonvested at December 28, 2018	142,236	$ 49.78
Granted	116,387	82.31
Vested	(31,386)	65.62
Forfeited	(22,014)	59.64
Nonvested at December 31, 2019	205,223	$ 64.75

As of December 31, 2019, there was $8.2 million of total unrecognized compensation cost related to time-based RSAs and RSUs, which is expected to be recognized over a weighted-average period of approximately 2.4 years. The fair value of RSA and RSU shares vested in 2019, 2018 and 2017 was $2.4 million, $9.7 million and $6.4 million, respectively. The weighted average grant date fair value of RSAs and RSUs granted during fiscal years 2019, 2018 and 2017 was $82.31, $52.14 and $34.18, respectively.

Performance-Based Shares

The following table summarizes PRSU activity during the fiscal year ended December 31, 2019:

	Performance-Vested Activity	Weighted Average Grant Date Fair Value
Nonvested at December 28, 2018	287,134	$ 36.15
Granted	50,492	101.17
Vested	(75,008)	28.41
Forfeited	(71,026)	36.17
Nonvested at December 31, 2019	191,592	$ 56.30

For the Company's PRSUs, in addition to service conditions, the ultimate number of shares to be earned depends on the achievement of financial performance or market-based conditions. The financial performance condition is based on the Company's sales targets. The market conditions are based on the Company's achievement of a relative total shareholder return ("TSR") performance requirement, on a percentile basis, compared to a defined group of peer companies over two and three year performance periods.

(10.) STOCK-BASED COMPENSATION (Continued)

Compensation expense for the PRSUs is initially estimated based on target performance and adjusted as appropriate throughout the performance period. At December 31, 2019, there was $4.7 million of total unrecognized compensation cost related to unvested PRSUs, which is expected to be recognized over a weighted-average period of approximately 1.7 years. The fair value of PRSU shares vested in 2019 and 2018 was $6.7 million and $9.1 million, respectively. There were no PRSU shares vested in 2017. The weighted average grant date fair value of PRSUs granted during fiscal years 2019, 2018 and 2017 was $101.17, $45.37 and $31.62, respectively.

The grant-date fair value of the market-based portion of the PRSUs granted during fiscal year 2019, 2018 and 2017 was determined using the Monte Carlo simulation model on the date of grant. The weighted average fair value and assumptions used to value the TSR portion of the PRSUs granted are as follows:

	2019	2018	2017
Weighted average fair value	$ 117.03	$ 37.46	$ 25.41
Risk-free interest rate	2.46%	2.28%	1.14%
Expected volatility	40%	40%	48%
Expected life (in years)	2.8	2.9	1.8
Expected dividend yield	—%	—%	—%

(11.) OTHER OPERATING EXPENSES

OOE for fiscal years 2019, 2018 and 2017 is comprised of the following (in thousands):

	2019	2018	2017
Strategic reorganization and alignment	$ 5,812	$ 10,624	$ 5,891
Manufacturing alignment to support growth	2,145	3,089	—
Consolidation and optimization initiatives	—	844	12,803
Acquisition and integration costs	377	—	10,870
Other general expenses	3,817	1,508	6,874
Total other operating expenses	$ 12,151	$ 16,065	$ 36,438

Strategic reorganization and alignment

As a result of the strategic review of its customers, competitors and markets, the Company began taking steps in 2017 to better align its resources in order to enhance the profitability of its portfolio of products. These initiatives include improving its business processes and redirecting investments away from projects where the market does not justify the investment, as well as aligning resources with market conditions and the Company's future strategic direction. The Company estimates that it will incur aggregate pre-tax charges in connection with the strategic reorganization and alignment plan, including projects reported in discontinued operations, of between approximately $22 million to $23 million, the majority of which are expected to be cash expenditures. During the 2019, the Company incurred charges relating to this initiative, which primarily included severance and fees for professional services recorded within the Medical segment. As of December 31, 2019, total expense incurred for this initiative since inception, including amounts reported in discontinued operations, was $22.3 million. These actions were substantially completed at the end of 2019.

Manufacturing alignment to support growth

In 2017, the Company initiated several initiatives designed to reduce costs, increase manufacturing capacity to accommodate growth and improve operating efficiencies. The plan involves the relocation of certain manufacturing operations and expansion of certain of the Company's facilities. The Company estimates that it will incur aggregate pre-tax restructuring related charges in connection with the realignment plan of between approximately $6 million to $7 million, the majority of which are expected to be cash expenditures. Costs related to the Company's manufacturing alignment to support growth initiative were primarily recorded within the Medical segment. As of December 31, 2019, total expense incurred for this initiative since inception was $5.2 million. These actions were substantially completed at the end of 2019.

(11.) OTHER OPERATING EXPENSES (Continued)

Consolidation and optimization initiatives

Costs related to the Company's consolidation and optimization initiatives were primarily recorded within the Medical segment. The Company does not expect to incur any material additional costs associated with these activities.

The following table summarizes the change in accrued liabilities related to the initiatives described above (in thousands):

	Severance and Retention	Other	Total
December 28, 2018	$ 1,668	$ 202	$ 1,870
Restructuring charges	2,095	5,862	7,957
Cash payments	(2,374)	(5,468)	(7,842)
December 31, 2019	$ 1,389	$ 596	$ 1,985

Acquisition and Integration Expenses

During 2019, the Company incurred expenses related to the acquisition of USB, and primarily include legal expenses. Acquisition and integration costs incurred during 2017 were predominantly related to the acquisition of Lake Region Medical ("LRM") and primarily include professional, consulting, severance, retention, relocation, and travel costs. Integration costs primarily include professional, consulting, severance, retention, relocation, and travel costs.

Other General Expenses

During 2019, 2018 and 2017, the Company recorded losses in connection with various asset disposals and/or write-downs and expenses related to other initiatives not described above, which relate primarily to integration and operational initiatives to reduce future operating costs and improve operational efficiencies. The 2019 amount primarily includes systems conversion expenses, expenses incurred in connection with a customer filing Chapter 11 bankruptcy, and expenses related to the restructuring of certain legal entities of the Company. The 2017 amount also includes approximately $5.3 million in expense related to the Company's leadership transitions, which were recorded within the corporate unallocated segment.

(12.) INCOME TAXES

On December 22, 2017, the Tax Cuts and Jobs Act of 2017 (the "Tax Reform Act") was signed into law making significant changes to the Internal Revenue Code. Changes include, but are not limited to, a corporate tax rate decrease from 35% to 21% effective for tax years beginning after December 31, 2017, the transition of U.S international taxation from a worldwide tax system to a territorial system, and a one-time transition tax on the mandatory deemed repatriation of cumulative foreign earnings as of December 31, 2017.

Under GAAP, the effect of a change in tax laws or rates is to be recognized in income from continuing operations in the period that includes the enactment date. As such, the Company recognized an estimate of the impact of the Tax Reform Act in the year ended December 29, 2017. The Company had an estimated $147.5 million of undistributed foreign earnings and profit subject to the deemed mandatory repatriation as of December 29, 2017 and recognized a provisional $14.7 million in 2017 for the one-time transition tax. The Company had sufficient U.S. net operating losses to offset cash tax liabilities associated with the repatriation tax. In addition, as a result of the reduction in the U.S. corporate income tax rate from 35% to 21% under the Tax Reform Act, the Company revalued its ending net deferred tax liabilities at December 29, 2017 and recognized a $56.5 million tax benefit in the Company's Consolidated Statement of Operations for the year ended December 29, 2017.

(12.) INCOME TAXES (Continued)

On December 22, 2017, the SEC issued Staff Accounting Bulletin ("SAB") No. 118 to address the application of GAAP in situations when a registrant does not have the necessary information available, prepared, or analyzed (including computations) in reasonable detail to complete the accounting for certain income tax effects of the Tax Reform Act. The Company recognized the tax impact of the revaluation of deferred tax assets and liabilities and the provisional tax impact related to deemed repatriated earnings and included these amounts in its consolidated financial statements for the year ended December 29, 2017. Based on additional analysis conducted, the Company updated the provisional amount of the one-time transition tax to $18.9 million, representing an increase of $4.2 million over the $14.7 million amount recorded as of December 29, 2017. As stated above, the Company had sufficient U.S. net operating losses to offset cash tax liabilities associated with the repatriation tax. In part, due to the utilization of additional net operating losses to offset the additional transition tax, the Company adjusted its revaluation of the adjusted ending net deferred tax liabilities as of December 29, 2017, resulting in a recognized tax benefit of $60.7 million, representing an increase of $4.2 million to the originally recorded $56.5 million tax benefit recorded in the Company's Consolidated Statement of Operations for the year ended December 29, 2017.

In 2018, the Company completed its determination of the accounting implications of the Tax Reform Act. The impact of these adjustments was reflected in the Company's financial results for the year ended December 28, 2018 and its timely filed 2017 U.S. corporate income tax return. Further, the Company records the consequences of the new Global Intangible Low-Taxed Income ("GILTI") provision of the Tax Reform Act as a period cost when incurred.

Income from continuing operations before taxes for fiscal years 2019, 2018 and 2017 consisted of the following (in thousands):

	2019	2018	2017
U.S.	$ 40,203	$ (4,273)	$ 306
International	64,990	65,389	48,953
Total income from continuing operations before taxes	$ 105,193	$ 61,116	$ 49,259

The provision (benefit) for income taxes from continuing operations for fiscal years 2019, 2018 and 2017 was comprised of the following (in thousands):

	2019	2018	2017
Current:			
Federal	$ 14,090	$ 80	$ (1,558)
State	87	166	(29)
International	10,083	9,490	8,539
	24,260	9,736	6,952
Deferred:			
Federal	(8,813)	6,610	(45,114)
State	332	103	(295)
International	(1,804)	(2,366)	629
	(10,285)	4,347	(44,780)
Total provision (benefit) for income taxes	$ 13,975	$ 14,083	$ (37,828)

(12.) INCOME TAXES (Continued)

The provision (benefit) for income taxes from continuing operations differs from the U.S. statutory rate for fiscal years 2019, 2018 and 2017 due to the following:

	2019		2018		2017	
Statutory rate	$ 22,091	21.0%	$ 12,834	21.0%	$ 17,240	35.0 %
Federal tax credits (including R&D)	(4,797)	(4.6)	(1,700)	(2.8)	(1,674)	(3.4)
Foreign rate differential	(5,479)	(5.2)	(6,040)	(9.9)	(12,934)	(26.3)
Stock-based compensation	(2,422)	(2.3)	(2,821)	(4.6)	(3,232)	(6.6)
Uncertain tax positions	(920)	(0.9)	147	0.2	34	0.1
State taxes, net of federal benefit	1,106	1.1	975	1.6	(543)	(1.1)
U.S. tax on foreign earnings, net of §250 deduction	5,201	4.9	10,473	17.1	1,471	3.0
Valuation allowance	(1,606)	(1.5)	(567)	(0.9)	1,030	2.1
Tax Reform Act	—	—	11	—	(39,394)	(80.0)
Other	801	0.8	771	1.3	174	0.4
Effective tax rate	$ 13,975	13.3%	$ 14,083	23.0%	$ (37,828)	(76.8)%

The difference between the Company's effective tax rate and the U.S. federal statutory income tax rate in the current year is primarily attributable to the components of the Tax Reform Act, including a provision for GILTI and a provision for the Foreign Derived Intangible Income ("FDII") deduction. In 2018, the FDII deduction, as well as the statutory deduction of 50% of the GILTI inclusion, were subject to limitations based on U.S. taxable income. In addition to the components of the Tax Reform Act, differences in the effective tax rate are attributable to the availability of Foreign Tax Credits, R&D Credits and the impact of the Company's earnings realized in foreign jurisdictions with statutory rates that are different than the U.S. federal statutory rate. The Company's foreign earnings are primarily derived from Switzerland, Mexico, Uruguay, and Ireland. The Company currently has a tax holiday in Malaysia through April 2023 provided certain conditions are met.

Difference Attributable to Foreign Investment: Certain foreign subsidiary earnings are subject to U.S. taxation under the Tax Reform Act. The Company intends to permanently reinvest substantially all of our foreign subsidiary earnings, as well as our capital in our foreign subsidiaries, with the exception of distributions made out of current year earnings and profits ("E&P") and E&P previously taxed as of and for the year ended December 29, 2017, including E&P subject to the toll charge under the Tax Reform Act. The Company accrues for withholding taxes on distributions in the year that distributions are made.

(12.) INCOME TAXES (Continued)

The net deferred tax liability consists of the following (in thousands):

	December 31, 2019	December 28, 2018
Tax credit carryforwards	$ 14,921	$ 24,593
Inventories	11,333	3,408
Net operating loss carryforwards	8,254	18,088
Operating lease liabilities	5,544	—
Stock-based compensation	4,844	2,340
Accrued expenses	4,625	39
Gross deferred tax assets	49,521	48,468
Less valuation allowance	(22,229)	(34,339)
Net deferred tax assets	27,292	14,129
Property, plant and equipment	(6,017)	(9,445)
Intangible assets	(192,091)	(198,648)
Operating lease assets	(5,161)	—
Other	(7,563)	(6,009)
Gross deferred tax liabilities	(210,832)	(214,102)
Net deferred tax liability	$ (183,540)	$ (199,973)
Presented as follows:		
Noncurrent deferred tax asset	$ 4,438	$ 3,937
Noncurrent deferred tax liability	(187,978)	(203,910)
Net deferred tax liability	$ (183,540)	$ (199,973)

As of December 31, 2019, the Company has the following carryforwards available:

Jurisdiction	Tax Attribute	Amount (in millions)	Begin to Expire
U.S. State	Net operating losses[(1)]	$ 111.2	2020
International	Net operating losses[(1)]	2.6	2023
U.S. Federal	Foreign tax credits	9.0	2020
U.S. Federal and State	R&D tax credits	2.3	2020
U.S. State	Investment tax credits	5.1	2020

(1) Net operating losses ("NOLs") are presented as pre-tax amounts. As of December 31, 2018, the Company had $39.1 million of federal NOL carryforwards available. The Company utilized the remainder of the federal NOLs in 2019.

In assessing the realizability of deferred tax assets, management considers, within each taxing jurisdiction, whether it is more likely than not that some portion or all of the deferred tax assets will not be realized. Management considers the scheduled reversal of deferred tax liabilities, projected future taxable income and tax planning strategies in making this assessment. Based on the consideration of the weight of both positive and negative evidence, management has determined it is more likely than not that a portion of the deferred tax assets as of December 31, 2019 and December 28, 2018 related to certain foreign tax credits, state investment tax credits, and foreign and state net operating losses will not be realized.

(12.) INCOME TAXES (Continued)

The Company files annual income tax returns in the U.S., various state and local jurisdictions, and in various foreign jurisdictions. A number of years may elapse before an uncertain tax position, for which the Company has unrecognized tax benefits, is examined and finally settled. While it is often difficult to predict the final outcome or the timing of resolution of any particular uncertain tax position, the Company believes that its unrecognized tax benefits reflect the most probable outcome. The Company adjusts these unrecognized tax benefits, as well as the related interest, in light of changing facts and circumstances. The resolution of an uncertain tax position, if recognized, would be recorded as an adjustment to the Provision (Benefit) for Income Taxes and the effective tax rate in the period of resolution.

Below is a summary of changes to the unrecognized tax benefit for fiscal years 2019, 2018 and 2017 (in thousands):

	2019	2018[1]	2017[2]
Balance, beginning of year	$ 5,369	$ 12,088	$ 10,561
Additions based upon tax positions related to the current year	300	300	3,833
Reductions related to prior period tax returns	(1,223)	(75)	(14)
Reductions relating to settlements with tax authorities	—	(98)	—
Reductions relating to divestiture	—	(6,846)	—
Reductions as a result of a lapse of applicable statute of limitations	—	—	(510)
Revaluation due to change in tax rate (Tax Reform Act)	—	—	(1,782)
Balance, end of year	$ 4,446	$ 5,369	$ 12,088

(1) The amounts for 2018 reflect discontinued operations through the date of divestiture of the AS&O Product Line, which is reflected in the table as a reduction relating to divestiture.

(2) The amounts for 2017 include discontinued operations.

The tax years that remain open and subject to tax audits vary depending on the tax jurisdiction. The Internal Revenue Service ("IRS") is currently examining the U.S. subsidiaries of the Company for the taxable years 2014 - 2018 and the 2019 taxable year remains subject to examination by the IRS. The U.S. subsidiaries of the former LRM are still subject to U.S. federal, state, and local examinations for the taxable years 2006 to 2014.

It is reasonably possible that a reduction of approximately $0.6 million of the balance of unrecognized tax benefits may occur within the next twelve months as a result of the lapse of the statute of limitations and/or audit settlements. As of December 31, 2019, approximately $4.4 million of unrecognized tax benefits would favorably impact the effective tax rate (net of federal impact on state issues), if recognized.

The Company recognizes interest related to unrecognized tax benefits as a component of Provision (Benefit) for Income Taxes on the Consolidated Statements of Operations. During 2019, 2018 and 2017, the recorded amounts for interest and penalties, respectively, were not significant.

(13.) COMMITMENTS AND CONTINGENCIES

Litigation

In April 2013, the Company commenced an action against AVX Corporation and AVX Filters Corporation (collectively "AVX") alleging that AVX had infringed on the Company's patents by manufacturing and selling filtered feedthrough assemblies used in implantable pacemakers and cardioverter defibrillators that incorporate the Company's patented technology. Two juries in the U.S. District Court for the District of Delaware have returned verdicts finding that AVX infringed on three of the Company's patents and awarded the Company $37.5 million in damages. In March 2018, the U.S. District Court for the District of Delaware vacated the original damage award and ordered a retrial on damages. In the January 2019 retrial on damages, the jury awarded the Company $22.2 million in damages. On July 31, 2019, the U.S. District Court for the District of Delaware entered an order denying AVX's post-trial motion to overturn the jury verdict in favor of the Company. On August 23, 2019, AVX filed its notice of appeal with the United States Court of Appeals for the Federal Circuit and on September 5, 2019, the Company filed its notice of cross-appeal with the United States Court of Appeals for the Federal Circuit. To date, the Company has recorded no gains in connection with this litigation.

(13.) COMMITMENTS AND CONTINGENCIES (Continued)

The Company is a party to various other legal actions arising in the normal course of business. The Company does not expect that the ultimate resolution of any other pending legal actions will have a material effect on its consolidated results of operations, financial position, or cash flows. However, litigation is subject to inherent uncertainties. As such, there can be no assurance that any pending legal action, which the Company currently believes to be immaterial, will not become material in the future.

Environmental Matters

In January 2015, LRM, which was acquired by the Company in October 2015, was notified by the New Jersey Department of Environmental Protection ("NJDEP") of NJDEP's intent to revoke a no further action determination made by NJDEP in favor of LRM in 2002 pertaining to a property on which a subsidiary of LRM operated a manufacturing facility in South Plainfield, New Jersey beginning in 1971. LRM sold the property in 2004 and vacated the facility in 2007. In response to NJDEP's notice, the Company further investigated the matter and submitted a technical report to NJDEP in August of 2015 that concluded that NJDEP's notice of intent to revoke was unwarranted. After reviewing the Company's technical report, NJDEP issued a draft response in May 2016 stating that NJDEP would not revoke the no further action determination at that time, but would require some additional site investigation to support the Company's conclusion. The Company met with NJDEP representatives to discuss the appropriate scope of the requested additional investigation, and the requested additional investigation is ongoing. In late 2019, NJDEP informed LRM that NJDEP was considering taking over the investigation of the property in light of LRM's difficulty in securing access to the property from the current owner. Separately, in April 2019, NJDEP indicated it believes the property to be a contributing source to local groundwater contamination. The Company disagrees with NJDEP's assertion; however, the Company is cooperating with NJDEP on this matter. The Company does not expect this environmental matter will have a material effect on its consolidated results of operations, financial position or cash flows.

License Agreements

The Company is a party to various license agreements for technology that is utilized in certain of its products. The most significant of these agreements are the licenses for basic technology used in the production of wet tantalum capacitors, filtered feedthroughs and MRI compatible lead systems. Expenses related to license agreements were $1.4 million, $1.6 million, and $1.1 million, for 2019, 2018 and 2017, respectively, and are primarily included in Cost of Sales.

Product Warranties

The Company generally warrants that its products will meet customer specifications and will be free from defects in materials and workmanship. The change in product warranty liability for fiscal years 2019 and 2018 was comprised of the following (in thousands):

	2019	2018
Beginning balance	$ 2,600	$ 2,820
Additions to warranty reserve, net of reversals	2,605	620
Adjustments to pre-existing warranties	(1,039)	—
Warranty claims settled	(2,233)	(840)
Ending balance	$ 1,933	$ 2,600

Self-Insurance Liabilities

As of December 31, 2019, and at various times in the past, the Company self-funded its workers' compensation and employee medical and dental expenses. The Company has established reserves to cover these self-insured liabilities and also maintains stop-loss insurance to limit its exposures under these programs. Claims reserves represent accruals for the estimated uninsured portion of reported claims, including adverse development of reported claims, as well as estimates of incurred but not reported claims. Claims incurred but not reported are estimated based on the Company's historical experience, which is continually monitored, and accruals are adjusted when warranted by changes in facts and circumstances. The Company's actual experience may be different than its estimates, sometimes significantly. Changes in assumptions, as well as changes in actual experience could cause these estimates to change. Insurance and claims expense will vary from period to period based on the severity and frequency of claims incurred in a given period. The Company's self-insurance reserves totaled $4.5 million and $4.2 million as of December 31, 2019 and December 28, 2018, respectively. These accruals are recorded in Accrued Expenses and Other Current Liabilities and Other Long-Term Liabilities in the Consolidated Balance Sheets.

(14.) LEASES

The Company primarily leases certain office and manufacturing facilities under operating leases, with additional operating leases for machinery, office equipment and vehicles.

The following table presents the weighted average remaining lease term and discount rate as of December 31, 2019:

Weighted-average remaining lease term of operating leases (in years)	7.4
Weighted-average discount rate of operating leases	5.5%

The components and classification of lease cost as of December 31, 2019 are as follows (in thousands):

Operating lease cost	$	9,870
Short-term lease cost (leases with initial term of 12 months or less)		57
Variable lease cost		2,419
Sublease income		(1,894)
Total lease cost	$	10,452

Cost of sales	$	8,772
SG&A expenses		1,107
Research, development and engineering costs		556
Other operating expenses		17
Total lease cost	$	10,452

The Company's sublease income is derived primarily from certain real estate leases to several non-affiliated tenants under operating sublease arrangements.

Operating lease expense for fiscal years 2018 and 2017, under ASC 840, the predecessor to ASC 842, were as follows (in thousands):

	2018	2017
Operating lease expense	$ 10,753	$ 14,320

At December 31, 2019, the maturities of operating lease liabilities were as follows (in thousands):

2020	9,793
2021	9,284
2022	7,136
2023	6,279
2024	5,755
Thereafter	16,624
Total lease payments	54,871
Less imputed interest	(10,250)
Total	$ 44,621

The Company's future minimum lease commitments, net of sublease income, as of December 28, 2018, under ASC 840 were as follows (in thousands):

	2019	2020	2021	2022	2023	After 2023
Future minimum lease payments	$ 8,562	7,290	7,348	5,269	5,112	14,589

As of December 31, 2019, the Company did not have any leases that have not yet commenced.

(14.) LEASES (Continued)

Supplemental cash flow information related to leases for the fiscal year ended December 31, 2019 is as follows (in thousands):

Cash paid for amounts included in the measurement of operating lease liabilities	$	10,235
ROU assets obtained in exchange for new operating lease liabilities		8,778

During the fiscal year ended December 31, 2019, the Company extended the lease terms for five of its manufacturing facilities. As a result of these lease modifications, the Company re-measured the lease liability and adjusted the ROU asset on the modification dates.

(15.) EARNINGS PER SHARE

The following table sets forth a reconciliation of the information used in computing basic and diluted EPS for fiscal years 2019, 2018 and 2017 (in thousands, except per share amounts):

	2019	2018	2017
Numerator for basic and diluted EPS:			
Income from continuing operations	$ 91,218	$ 47,033	$ 87,087
Income (loss) from discontinued operations	5,118	120,931	(20,408)
Net income	$ 96,336	$ 167,964	$ 66,679
Denominator for basic EPS:			
Weighted average shares outstanding	32,627	32,136	31,402
Effect of dilutive securities:			
Stock options, restricted stock and restricted stock units	410	460	654
Denominator for diluted EPS	33,037	32,596	32,056
Basic earnings (loss) per share:			
Income from continuing operations	$ 2.80	$ 1.46	$ 2.77
Income (loss) from discontinued operations	0.16	3.76	(0.65)
Basic earnings per share	2.95	5.23	2.12
Diluted earnings (loss) per share:			
Income from continuing operations	$ 2.76	$ 1.44	$ 2.72
Income (loss) from discontinued operations	0.15	3.71	(0.64)
Diluted earnings per share	2.92	5.15	2.08

The diluted weighted average share calculations do not include the following securities for fiscal years 2019, 2018 and 2017, which are not dilutive to the EPS calculations or the performance criteria have not been met (in thousands):

	2019	2018	2017
Time-vested stock options, restricted stock and restricted stock units	30	237	676
Performance-vested restricted stock units	47	144	285

(16.) STOCKHOLDERS' EQUITY

Common Stock

The following table sets forth the changes in the number of shares of common stock for fiscal years 2019 and 2018:

	Issued	Treasury Stock	Outstanding
2019			
Shares outstanding at beginning of year	32,624,494	(151,327)	32,473,167
Stock options exercised	116,904	21,866	138,770
RSAs issued, net of forfeitures, and vesting of RSUs	105,619	(17,085)	88,534
Shares outstanding at end of year	32,847,017	(146,546)	32,700,471
2018			
Shares outstanding at beginning of year	31,977,953	(106,526)	31,871,427
Stock options exercised	413,317	—	413,317
RSAs issued, net of forfeitures, and vesting of RSUs	233,224	(44,801)	188,423
Shares outstanding at end of year	32,624,494	(151,327)	32,473,167

Accumulated Other Comprehensive Income

Accumulated Other Comprehensive Income ("AOCI") is comprised of the following (in thousands):

	Defined Benefit Plan Liability	Cash Flow Hedges	Foreign Currency Translation Adjustment	Total Pre-Tax Amount	Tax	Net-of-Tax Amount
December 29, 2017	$ (1,422)	$ 3,418	$ 50,200	$ 52,196	$ (17)	$ 52,179
Unrealized gain on cash flow hedges	—	1,904	—	1,904	(400)	1,504
Realized gain on foreign currency hedges	—	(186)	—	(186)	39	(147)
Realized gain on interest rate swap hedges	—	(1,697)	—	(1,697)	356	(1,341)
Net defined benefit plan adjustments	232	—	—	232	70	302
Foreign currency translation loss	—	—	(19,925)	(19,925)	—	(19,925)
Reclassifications to earnings[1]	895	—	264	1,159	$ (261)	898
Reclassification to retained earnings[2]	—	—	—	—	(466)	(466)
December 28, 2018	$ (295)	$ 3,439	$ 30,539	$ 33,683	$ (679)	$ 33,004
Unrealized loss on cash flow hedges	—	(4,028)	—	(4,028)	846	(3,182)
Realized gain on foreign currency hedges	—	(148)	—	(148)	31	(117)
Realized gain on interest rate swap hedges	—	(1,621)	—	(1,621)	340	(1,281)
Net defined benefit plan adjustments	(617)	—	—	(617)	81	(536)
Foreign currency translation loss	—	—	(7,900)	(7,900)	—	(7,900)
December 31, 2019	$ (912)	$ (2,358)	$ 22,639	$ 19,369	$ 619	$ 19,988

(1) Accumulated foreign currency translation losses of $0.3 million and defined benefit plan liabilities of $0.6 million (net of income taxes of $0.3 million) were reclassified to earnings during 2018 as a result of the divestiture of the AS&O Product Line.

(2) Represents the stranded tax effects reclassified from AOCI to retained earnings resulting from the adoption of ASU 2018-02 during 2018.

(17.) FINANCIAL INSTRUMENTS AND FAIR VALUE MEASUREMENTS

Assets and Liabilities Measured at Fair Value on a Recurring Basis

Fair value measurement standards apply to certain financial assets and liabilities that are measured at fair value on a recurring basis (each reporting period). For the Company, these financial assets and liabilities include its derivative instruments and contingent consideration. The Company does not have any nonfinancial assets or liabilities that are measured at fair value on a recurring basis.

The Company is exposed to global market risks, including the effect of changes in interest rates and foreign currency exchange rates, and uses derivatives to manage these exposures that occur in the normal course of business. The Company does not hold or issue derivatives for trading or speculative purposes. All derivatives are recorded at fair value on the balance sheet.

The following tables provide information regarding assets and liabilities recorded at fair value on a recurring basis (in thousands):

	Fair Value	Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
December 31, 2019				
Assets: Foreign currency contracts	$ 710	$ —	$ 710	$ —
Liabilities: Interest rate swaps	3,068	—	3,068	—
Liabilities: Contingent consideration	4,200	—	—	4,200
December 28, 2018				
Assets: Interest rate swaps	$ 4,171	$ —	$ 4,171	$ —
Liabilities: Foreign currency contracts	732	—	732	—

Interest Rate Swaps

The Company periodically enters into interest rate swap agreements in order to reduce the cash flow risk caused by interest rate changes on its outstanding floating rate borrowings. Under these swap agreements, the Company pays a fixed rate of interest and receives a floating rate equal to one-month LIBOR. The variable rate received from the swap agreements and the variable rate paid on the outstanding debt will have the same rate of interest, excluding the credit spread, and will reset and pay interest on the same date. The Company has designated these swap agreements as cash flow hedges based on concluding the hedged forecasted transaction is probable of occurring within the period the cash flow hedge is anticipated to affect earnings.

The fair value of the Company's swap agreements are determined through the use of a cash flow model that utilizes observable market data inputs. These observable market data inputs include LIBOR, swap rates, and credit spread curves. In addition, the Company receives fair value estimates from the swap agreement counterparties to verify the reasonableness of the Company's estimates. The estimated fair value of the swap agreements represents the amount the Company would receive (pay) to terminate the contracts.

Information regarding the Company's outstanding interest rate swaps designated as cash flow hedges as of December 31, 2019 is as follows (dollars in thousands):

Notional Amount	Start Date	End Date	Pay Fixed Rate	Receive Current Floating Rate	Fair Value	Balance Sheet Location
$ 200,000	Jun 2017	Jun 2020	1.1325%	1.7920%	$ 543	Accrued expenses and other current liabilities
65,000	Jul 2019	Jul 2020	1.8900	1.7920	(72)	Accrued expenses and other current liabilities
400,000	Apr 2019	Apr 2020	2.4150	1.7101	(730)	Accrued expenses and other current liabilities
200,000	Jun 2020	Jun 2023	2.1785	[1]	(2,809)	Other long-term liabilities

[1] The interest rate swap is not in effect until June 2020.

(17.) FINANCIAL INSTRUMENTS AND FAIR VALUE MEASUREMENTS (Continued)

As of December 28, 2018, the Company had outstanding an interest rate swap with a notional amount of $200 million. The fair value as of December 28, 2018 was $4.2 million and was included in Other assets in the Consolidated Balance Sheets.

Foreign Currency Contracts

The Company periodically enters into foreign currency forward contracts to hedge its exposure to foreign currency exchange rate fluctuations in its international operations. The Company has designated these foreign currency forward contracts as cash flow hedges.

The fair value of foreign currency contracts are determined through the use of cash flow models that utilize observable market data inputs to estimate fair value. These observable market data inputs include foreign exchange rate and credit spread curves. In addition, the Company receives fair value estimates from the foreign currency contract counterparties to verify the reasonableness of the Company's estimates. The Company's foreign currency contracts are categorized in Level 2 of the fair value hierarchy. The fair value of the Company's foreign currency contracts will be realized as Sales or Cost of Sales as the inventory, which the contracts are hedging, is sold.

Information regarding outstanding foreign currency forward contracts designated as cash flow hedges as of December 31, 2019 is as follows (dollars in thousands):

Notional Amount	Start Date	End Date	$/Foreign Currency		Fair Value	Balance Sheet Location
$ 11,166	Jan 2020	Jun 2020	0.0490	Peso	$ 710	Prepaid expenses and other current assets

Information regarding outstanding foreign currency contracts designated as cash flow hedges as of December 28, 2018 is as follows (dollars in thousands):

Aggregate Notional Amount	Start Date	End Date	$/Foreign Currency		Fair Value	Balance Sheet Location
$ 12,621	Jan 2019	Jun 2019	1.1686	Euro	$ (149)	Accrued expenses and other current liabilities
10,991	Jan 2019	Jun 2019	0.0523	Peso	(494)	Accrued expenses and other current liabilities
10,535	Jan 2019	Jun 2019	1.1705	Euro	(141)	Accrued expenses and other current liabilities
11,019	Jan 2019	Jun 2019	0.0483	Peso	(316)	Accrued expenses and other current liabilities
10,499	Jul 2019	Dec 2019	0.0500	Peso	368	Accrued expenses and other current liabilities

Derivative Instruments with Hedge Accounting Designation

The following table presents the impact of cash flow hedge derivative instruments on other comprehensive income ("OCI"), AOCI and the Company's Consolidated Statement of Operations for fiscal years 2019, 2018 and 2017 (in thousands):

	Gain (Loss) Recognized in OCI			Gain (Loss) Reclassified from AOCI			
Derivative	2019	2018	2017	Location in Statement of Operations	2019	2018	2017
Interest rate swaps	$ (5,618)	$ 1,589	$ 1,263	Interest expense	$ 1,621	$ 1,697	$ 466
Foreign exchange contracts	(1,044)	(1,193)	1,472	Sales	(1,334)	(758)	1,327
Foreign exchange contracts	2,634	1,508	972	Cost of sales	1,482	944	(84)

The Company expects to reclassify net losses totaling $0.2 million related to its cash flow hedges from AOCI into earnings during the next twelve months.

Contingent Consideration

Contingent consideration liabilities are remeasured to fair value each reporting period using assumptions including estimated revenues (based on internal operational budgets and long-range strategic plans), discount rates, probability of payment and projected payment dates.

(17.) FINANCIAL INSTRUMENTS AND FAIR VALUE MEASUREMENTS (Continued)

The contingent consideration fair value measurement is based on significant inputs not observable in the market and therefore constitute Level 3 inputs within the fair value hierarchy. The Company determines the fair value of the contingent consideration liabilities using a Monte Carlo simulation (which involves a simulation of future revenues during the earn out-period using management's best estimates) or a probability-weighted discounted cash flow analysis. Increases in projected revenues, estimated cash flows and probabilities of payment may result in significantly higher fair value measurements; decreases in these items may have the opposite effect. Increases in the discount rates in periods prior to payment may result in significantly lower fair value measurements and decreases in the discount rates may have the opposite effect.

Assets and Liabilities Measured at Fair Value on a Nonrecurring Basis

Fair value standards also apply to certain assets and liabilities that are measured at fair value on a nonrecurring basis. The carrying amounts of cash, accounts receivable, accounts payable and accrued expenses approximate fair value due to the short-term nature of these items.

Borrowings under the Company's Revolving Credit Facility, TLA Facility and TLB Facility accrue interest at a floating rate tied to a standard short-term borrowing index, selected at the Company's option, plus an applicable margin. The carrying amount of this floating rate debt approximates fair value based upon the respective interest rates adjusting with market rate adjustments.

Equity Investments

Equity investments are comprised of the following (in thousands):

	December 31, 2019	December 28, 2018
Equity method investment	$ 16,167	$ 15,148
Non-marketable equity securities	6,092	7,667
Total equity investments	$ 22,259	$ 22,815

The components of (Gain) Loss on Equity Investments, Net for each period were as follows (in thousands):

	2019	2018	2017
Equity method investment income	$ (1,100)	$ (5,623)	$ (3,685)
Impairment charges	1,575	—	5,250
Total (gain) loss on equity investments, net	$ 475	$ (5,623)	$ 1,565

During 2019, the Company determined that an investment in one of its non-marketable equity securities was impaired and determined the fair value to be zero based upon available market information. This assessment was based on qualitative indications of impairment. Factors that significantly influenced the determination of the impairment loss included the equity security's investee's financial condition, priority claims to the equity security, distributions rights and preferences, and status of the regulatory approval required to bring its product to market. Prior to the adoption of ASU 2016-01, the Company accounted for its non-marketable equity securities under the cost method of accounting. The other than temporary impairment charges during 2017 relate to non-marketable equity securities under the cost method of accounting.

There were no observable price adjustments on non-marketable equity securities related to the adoption of ASU 2016-01 during 2018 or 2019 and this is not applicable in prior periods.

The Company's equity method investment is in a Chinese venture capital fund focused on investing in life sciences companies. As of December 31, 2019, the Company owned 6.7% of this fund.

Pension Plan Assets

The fair value of the Company's pension plan assets are determined based upon quoted market prices in inactive markets or valuation models with observable market data inputs to estimate fair value. These observable market data inputs include benchmark yields, reported trades, broker/dealer quotes, issuer spreads, benchmark securities, bids, offers and reference data. The Company's pension plan assets are categorized Level 2 of the fair value hierarchy.

(18.) SEGMENT AND GEOGRAPHIC INFORMATION

The Company organizes its business into two reportable segments: (1) Medical and (2) Non-Medical. This segment structure reflects the financial information and reports used by the Company's management, specifically its Chief Operating Decision Maker ("CODM"), to make decisions regarding the Company's business, including resource allocations and performance assessments. This segment structure reflects the Company's current operating focus in compliance with ASC 280, *Segment Reporting*.

The Company defines segment income from operations as sales less cost of sales including amortization and expenses attributable to segment-specific selling, general, administrative, research, development, engineering and other operating activities. The remaining unallocated operating and other expenses are primarily administrative corporate headquarter expenses and capital costs that are not allocated to reportable segments. Transactions between the two segments are not significant.

The following table presents sales by product line for fiscal years 2019, 2018 and 2017 (in thousands).

	2019	2018	2017
Segment sales by product line:			
Medical			
Cardio & Vascular	$ 610,056	$ 585,464	$ 530,831
Cardiac & Neuromodulation	457,194	443,347	428,275
Advanced Surgical, Orthopedics & Portable Medical	132,429	133,225	120,006
Total Medical	1,199,679	1,162,036	1,079,112
Non-Medical	58,415	52,976	56,968
Total sales	$ 1,258,094	$ 1,215,012	$ 1,136,080

Geographic Area Information

The following table presents sales by significant country for fiscal years 2019, 2018 and 2017. In these tables, sales are allocated based on where the products are shipped (in thousands).

	2019	2018	2017
Sales by geographic area:			
United States	$ 698,474	$ 687,259	$ 662,133
Non-Domestic locations:			
Puerto Rico	154,644	146,500	140,184
Costa Rica	63,634	62,044	55,364
Rest of world	341,342	319,209	278,399
Total sales	$ 1,258,094	$ 1,215,012	$ 1,136,080

The following table presents revenues by significant customers, which are defined as any customer who individually represents 10% or more of a segment's total revenues for fiscal years 2019 and 2018.

	2019		2018	
Customer	**Medical**	**Non-Medical**	**Medical**	**Non-Medical**
Customer A	22%	*	22%	*
Customer B	18%	*	19%	*
Customer C	12%	*	12%	*
Customer D	*	22%	*	28%
All other customers	48%	78%	47%	72%

* Less than 10% of segment's total revenues for the period.

(18.) SEGMENT AND GEOGRAPHIC INFORMATION (Continued)

The following table presents revenues by significant ship to location, which is defined as any country where 10% or more of a segment's total revenues are shipped for fiscal years 2019 and 2018.

	2019		2018	
Ship to Location	**Medical**	**Non-Medical**	**Medical**	**Non-Medical**
United States	55%	58%	56%	66%
Puerto Rico	13%	*	13%	*
Canada	*	13%	*	11%
Rest of world	32%	29%	31%	23%

* Less than 10% of segment's total revenues for the period.

The following table presents income from continuing operations for the Company's reportable segments for fiscal years 2019, 2018 and 2017 (in thousands).

	2019	2018	2017
Segment income from continuing operations:			
Medical	$ 223,873	$ 224,893	$ 197,212
Non-Medical	16,289	14,697	11,335
Total segment income from continuing operations	240,162	239,590	208,547
Unallocated operating expenses	(82,527)	(84,035)	(82,898)
Operating income	157,635	155,555	125,649
Unallocated expenses, net	(52,442)	(94,439)	(76,390)
Income from continuing operations before taxes	$ 105,193	$ 61,116	$ 49,259

The following table presents depreciation and amortization expense for the Company's reportable segments for fiscal years 2019, 2018 and 2017 (in thousands).

	2019	2018	2017
Segment depreciation and amortization:			
Medical	$ 68,867	$ 71,922	$ 72,314
Non-Medical	1,039	1,364	2,675
Total depreciation and amortization included in segment income from continuing operations	69,906	73,286	74,989
Unallocated depreciation and amortization	7,989	8,252	6,194
Total depreciation and amortization	$ 77,895	$ 81,538	$ 81,183

The following table presents total assets for the Company's reportable segments as of December 31, 2019 and December 28, 2018 (in thousands).

	December 31, 2019	December 28, 2018
Identifiable assets:		
Medical	$ 2,233,534	$ 2,186,565
Non-Medical	51,031	53,812
Total reportable segments	2,284,565	2,240,377
Unallocated assets	68,528	86,304
Total assets	$ 2,353,093	$ 2,326,681

(18.) SEGMENT AND GEOGRAPHIC INFORMATION (Continued)

The following table presents capital expenditures for the Company's reportable segments for fiscal years 2019, 2018 and 2017 (in thousands).

	2019	2018	2017
Expenditures for tangible long-lived assets:			
Medical	$ 44,026	$ 34,615	$ 20,896
Non-Medical	397	573	661
Total reportable segments	44,423	35,188	21,557
Unallocated long-lived tangible assets	3,775	6,110	8,783
Total expenditures	$ 48,198	$ 41,298	$ 30,340

The following table presents PP&E by geographic area as of December 31, 2019 and December 28, 2018. In these tables, PP&E is aggregated based on the physical location of the tangible long-lived assets (in thousands).

	December 31, 2019	December 28, 2018
Long-lived tangible assets by geographic area:		
United States	$ 163,350	$ 151,851
Mexico	36,238	34,606
Ireland	33,126	32,190
Rest of world	13,471	12,622
Total	$ 246,185	$ 231,269

(19.) REVENUE FROM CONTRACTS WITH CUSTOMERS

Disaggregated Revenue

In general, the Company's business segmentation is aligned according to the nature and economic characteristics of its products and customer relationships and provides meaningful disaggregation of each business segment's results of operations. For a summary by disaggregated product line sales for each segment, refer to Note 18, "Segment and Geographic Information."

A significant portion of the Company's sales for fiscal years 2019, 2018 and 2017 and accounts receivable at December 31, 2019 and December 28, 2018 were to three customers as follows:

	Sales			Accounts Receivable	
	2019	2018	2017	December 31, 2019	December 28, 2018
Customer A	21%	21%	22%	13%	11%
Customer B	17%	19%	20%	19%	18%
Customer C	12%	12%	11%	20%	20%
	50%	52%	53%	52%	49%

Revenue recognized from products and services transferred to customers over time represented 12% of total revenue for fiscal year 2019, substantially all of which was within the Medical segment. The Company did not have any significant revenue related to contracts recognized over time for fiscal year 2018.

(19.) REVENUE FROM CONTRACTS WITH CUSTOMERS (Continued)

Contract Balances

The opening and closing balances of the Company's contract assets and contract liabilities are as follows (in thousands):

	December 31, 2019	December 28, 2018
Contract assets	$ 24,767	$ —
Contract liabilities	1,975	2,264

During the fiscal year ended December 31, 2019, the Company recognized $1.4 million of revenue that was included in the contract liability balance as of December 28, 2018. During the fiscal year ended December 28, 2018, the Company recognized $0.6 million of revenue that was included in the contract liability balance as of December 29, 2017.

(20.) QUARTERLY SALES AND EARNINGS DATA—UNAUDITED

(in thousands, except per share data)	Fourth Quarter	Third Quarter	Second Quarter	First Quarter
Fiscal Year 2019				
Sales	$ 325,637	$ 303,587	$ 314,194	$ 314,676
Gross profit	76,030 [(1)]	93,386	96,984	88,610
Income from continuing operations	11,044 [(1)]	30,586	28,222	21,366
EPS—basic	0.34	0.94	0.87	0.66
EPS—diluted	0.33	0.92	0.85	0.65
Fiscal Year 2018				
Sales	$ 303,034	$ 305,088	$ 314,464	$ 292,426
Gross profit	88,445	91,923	98,765	83,532
Income (loss) from continuing operations	19,196	(8,303)	23,056	13,084
EPS—basic	0.59	(0.26)	0.72	0.41
EPS—diluted	0.58	(0.26)	0.70	0.40

(1) In the fourth quarter of 2019, the Company recorded pre-tax charges and other expenses of $24 million related to the bankruptcy filing of a customer. These charges were included included in cost of sales ($21 million) and operating expenses ($3 million).

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None.

ITEM 9A. CONTROLS AND PROCEDURES

Management's Report on Internal Control Over Financial Reporting appears in Part II, Item 8, "Financial Statements and Supplementary Data" of this report and is incorporated into this Item 9A by reference.

a. Evaluation of Disclosure Controls and Procedures

Our management, including the principal executive officer and principal financial officer, evaluated our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934) related to the recording, processing, summarization and reporting of information in our reports that we file with the SEC as of December 31, 2019. These disclosure controls and procedures have been designed to provide reasonable assurance that material information relating to us, including our subsidiaries, is made known to our management, including these officers, by our employees, and that this information is recorded, processed, summarized, evaluated and reported, as applicable, within the time periods specified in the SEC's rules and forms. Based on their evaluation, as of December 31, 2019, our principal executive officer and principal financial officer have concluded that our disclosure controls and procedures are effective.

b. Changes in Internal Control Over Financial Reporting

With the exception of integration activities in connection with the Company's acquisition of certain assets from USB, there were no changes in the Company's internal control over financial reporting that occurred during the Company's fourth fiscal quarter ended December 31, 2019 that has materially affected, or is reasonably likely to materially affect, the Company's internal control over financial reporting.

On October 7, 2019, the Company completed its acquisition of certain assets from USB. Prior to this acquisition, USB was a privately-held company not subject to the Sarbanes-Oxley Act of 2002, the rules and regulations of the SEC, or other corporate governance requirements to which public companies may be subject. As of and for the fiscal year ended December 31, 2019, the operations associated with the assets acquired from USB constituted 1% of net assets, less than 1% of total assets, less than 1% of sales, and less than 1% of net income of the consolidated financial statement amounts as of and for the year ended December 31, 2019.

As part of the Company's ongoing integration activities, the Company is in the process of incorporating internal controls specific to the operations associated with the assets acquired from USB that the Company believes are appropriate and necessary to account for the acquisition and to consolidate and report these operations as part of Company's financial results. In accordance with guidance issued by the SEC, companies are permitted to exclude acquisitions from their final assessment of internal control over financial reporting during the year of acquisition. Accordingly, the Company has excluded the operations associated with the assets acquired from USB from the Company's assessment of internal control over financial reporting as of December 31, 2019 as the Company's integration activities are ongoing and incomplete. Refer to the Company's management report on internal control over financial reporting included in Part II, Item 8, "Financial Statements and Supplementary Data" of this report for additional information.

ITEM 9B. OTHER INFORMATION

None.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

Information regarding the Company's directors appearing under the caption "Election of Directors" in the Company's Proxy Statement for its 2020 Annual Meeting of Stockholders is incorporated herein by reference.

Information regarding the Company's executive officers is presented under the caption "Information About our Executive Officers" in Part I of this Annual Report on Form 10-K.

The other information required by Item 10 is incorporated herein by reference from the Company's Proxy Statement for its 2020 Annual Meeting of Stockholders.

ITEM 11. EXECUTIVE COMPENSATION

Information regarding executive compensation appearing under the captions "Compensation Discussion and Analysis", "Executive Compensation" and "Compensation Committee Interlocks and Insider Participation" in the Company's Proxy Statement for the 2020 Annual Meeting of Stockholders is incorporated herein by reference.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

Information regarding security ownership of certain beneficial owners and management and related stockholder matters, including the table titled "Equity Compensation Plan Information" and under the caption "Stock Ownership by Directors and Executive Officers" in the Company's Proxy Statement for the 2020 Annual Meeting of Stockholders is incorporated herein by reference.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

Information regarding certain relationships and related transactions, and director independence under the captions "Related Person Transactions" and "Board Independence" in the Company's Proxy Statement for the 2020 Annual Meeting of Stockholders is incorporated herein by reference.

ITEM 14. PRINCIPAL ACCOUNTING FEES AND SERVICES

Information regarding the fees paid to and services provided by Deloitte & Touche LLP, the Company's independent registered public accounting firm under the caption "Ratification of the Appointment of Independent Registered Public Accounting Firm" in the Company's Proxy Statement for the 2020 Annual Meeting of Stockholders is incorporated herein by reference.

PART IV

ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

(a) LIST OF DOCUMENTS FILED AS PART OF THIS REPORT

(1) Financial statements and financial statement schedules filed as part of this Annual Report on Form 10-K. Refer to Part II, Item 8. "Financial Statements and Supplementary Data."

(2) The following financial statement schedule is included in this Annual Report on Form 10-K (in thousands):

Schedule II—Valuation and Qualifying Accounts

Column A Description	Col. B Balance at Beginning of Period	Col. C—Additions: Charged to Costs & Expenses	Col. C—Additions: Charged to Other Accounts-Describe	Col. D Deductions - Describe	Col. E Balance at End of Period
December 31, 2019					
Allowance for doubtful accounts	$ 592	$ 1,884 [1]	$ 2 [3]	$ (35) [4]	$ 2,443
Valuation allowance for deferred tax assets	$ 34,339	$ 736 [2]	$ —	$ (12,846) [2][4][5]	$ 22,229
December 28, 2018					
Allowance for doubtful accounts	$ 536	$ 169	$ (2) [3]	$ (111) [4]	$ 592
Valuation allowance for deferred tax assets	$ 36,480	$ —	$ (170) [3]	$ (1,971) [2][4][5]	$ 34,339
December 29, 2017					
Allowance for doubtful accounts	$ 475	$ 194	$ —	$ (133) [4]	$ 536
Valuation allowance for deferred tax assets	$ 35,391	$ 3,284 [2]	$ —	$ (2,195) [4][5]	$ 36,480

[1] Valuation allowance recorded in the provision for doubtful accounts. The 2019 amount includes a $2.3 million reserve recorded in connection with a customer bankruptcy, net of adjustments to the Company's general reserve.

[2] Valuation allowance recorded in the provision for income taxes for certain net operating losses and tax credits. The 2019 deductions includes a release of the allowance for net operating losses utilized during 2019, the expiration of certain net operating losses, and the expiration of certain foreign and state tax credits. The decrease in 2018 includes the impact of the divestiture of the AS&O Product Line. The increase in 2017 includes the impact of the adoption of the Tax Reform Act, which increased the value of our state deferred tax assets to which a corresponding valuation allowance was recorded.

[3] Includes foreign currency translation effect.

[4] Accounts written off.

[5] Includes return to provision adjustments for prior years.

Schedules not listed above have been omitted because the information required to be set forth therein is not applicable or is shown in the financial statements or notes thereto.

(3) See exhibits listed under Part (b) below.

(b) EXHIBITS:

EXHIBIT NUMBER	DESCRIPTION
2.1	Agreement and Plan of Merger, dated as of August 27, 2015, by and among Lake Region Medical Holdings, Inc., Greatbatch, Inc. and Provenance Merger Sub Inc. (incorporated by reference to Exhibit 2.1 to our Current Report on Form 8-K filed on August 31, 2015).
2.2	Separation and Distribution Agreement, dated March 14, 2016, between Greatbatch, Inc. and QiG Group, LLC (incorporated by reference to Exhibit 2.1 to our Current Report on Form 8-K filed on March 18, 2016).

EXHIBIT NUMBER	DESCRIPTION
2.3	Master Purchase and Sale Agreement, dated as of May 3, 2018, by and among Greatbatch Ltd., Bandera Acquisition, LLC and, solely for purposes of being bound by Section 10.1(f), Section 10.3 and Section 11.13, Integer Holdings Corporation (incorporated by reference to Exhibit 2.1 to our Current Report on Form 8-K filed on July 9, 2018).
3.1	Restated Certificate of Incorporation of Integer Holdings Corporation (incorporated by reference to Exhibit 3.1 to our Quarterly Report on Form 10-Q for the period ended July 1, 2016).
3.2	By-laws of Integer Holdings Corporation (Amended as of August 3, 2016) (incorporated by reference to Exhibit 3.2 to our Quarterly Report on Form 10-Q for the period ended July 1, 2016).
4.1*	Description of Securities of Integer Holdings Corporation registered under Section 12 of the Exchange Act.
10.1	Credit Agreement, dated as of October 27, 2015, by among Greatbatch Ltd., as the borrower, Greatbatch, Inc., as parent, the financial institutions party thereto and Manufacturers and Traders Trust Company, as administrative agent (incorporated by reference to Exhibit 10.1 to our Current Report on Form 8-K filed on October 28, 2015).
10.2	Amendment No. 1 to Credit Agreement, dated as of November 29, 2016, between Greatbatch Ltd., as the borrower, Integer Holdings Corporation, as parent, and Manufacturers and Traders Trust Company, as administrative agent, and the Lenders party thereto. (incorporated by reference to Exhibit 10.8 to our Annual Report on Form 10-K for the year ended December 30, 2016).
10.3	Amendment No. 2 to Credit Agreement, dated as of March 17, 2017, by and among the lenders party thereto, Greatbatch Ltd., as the borrower, Integer Holdings Corporation, as parent, Manufacturers and Traders Trust Company, as administrative agent, and Credit Suisse Securities (USA) LLC, as arranger (incorporated by reference to Exhibit 10.1 to our Current Report on Form 8-K filed on March 20, 2017).
10.4	Amendment No. 3 to Credit Agreement, dated as of November 7, 2017, by and among the lenders party thereto, Greatbatch Ltd., as the borrower, Integer Holdings Corporation, as parent, Manufacturers and Traders Trust Company, as administrative agent, and Credit Suisse Securities (USA) LLC, as arranger (incorporated by reference to Exhibit 10.1 to our Current Report on Form 8-K filed on November 7, 2017).
10.5	Amendment No. 4 to Credit Agreement, dated as of June 8, 2018, among Greatbatch Ltd., as the borrower, Integer Holdings Corporation, as parent, Manufacturers and Traders Trust Company, as administrative agent, and the Lenders party thereto (incorporated by reference to Exhibit 10.1 to our Current Report on Form 8-K filed on June 8, 2018).
10.6	Amendment No. 5 to Credit Agreement, dated as of November 21, 2019, among Greatbatch Ltd., as the borrower, Integer Holdings Corporation, as parent, Manufacturers and Traders Trust Company, as administrative agent and as arranger, and the Lenders party thereto. (incorporated by reference to Exhibit 10.1 to our Current Report on Form 8-K filed on November 21, 2019).
10.7	Amendment No. 6 to Credit Agreement, dated as of November 21, 2019, by and among Greatbatch Ltd., as the borrower, Integer Holdings Corporation, as the parent, Manufacturers and Traders Trust Company, as administrative agent, Credit Suisse Loan Funding LLC, as arranger, and the lenders party thereto (incorporated by reference to Exhibit 10.2 to our Current Report on Form 8-K filed on November 21, 2019).
10.8#	Integer Holdings Corporation Executive Short Term Incentive Compensation Plan (incorporated by reference to Exhibit A to our Definitive Proxy Statement on Schedule 14A filed on April 17, 2017).
10.9#	2005 Stock Incentive Plan (incorporated by reference to Exhibit B to our Definitive Proxy Statement on Schedule 14A filed on April 20, 2007 (File No. 001-16137)).
10.10#	2009 Stock Incentive Plan (incorporated by reference to Exhibit A to our Definitive Proxy Statement on Schedule 14A filed on April 13, 2009 (File No. 001-16137)).
10.11#	2011 Stock Incentive Plan (incorporated by reference to Exhibit A to our Definitive Proxy Statement on Schedule 14A filed on April 14, 2014).
10.12#	Greatbatch, Inc. 2016 Stock Incentive Plan (incorporated by reference to Exhibit A to our Definitive Proxy Statement on Schedule 14A filed on April 18, 2016).
10.13#	Amendment to Greatbatch, Inc. 2011 Stock Incentive Plan, Greatbatch, Inc. 2009 Stock Incentive Plan, Greatbatch, Inc. 2005 Stock Incentive Plan (incorporated by reference to Exhibit 10.14 to our Annual Report on Form 10-K for the year ended January 3, 2014).
10.14#	Second Amendment to Greatbatch, Inc. 2011 Stock Incentive Plan and Greatbatch, Inc. 2009 Stock Incentive Plan (incorporated by reference to Exhibit 10.15 to our Annual Report on Form 10-K for the year ended December 30, 2016).

EXHIBIT NUMBER	DESCRIPTION
10.15#	First Amendment to Greatbatch, Inc. 2016 Stock Incentive Plan (incorporated by reference to Exhibit 10.16 to our Annual Report on Form 10-K for the year ended December 30, 2016).
10.16#	Amendment to Integer Holdings Corporation 2016 Stock Incentive Plan, Integer Holdings Corporation 2011 Stock Incentive Plan, Integer Holdings Corporation 2009 Stock Incentive Plan (incorporated by reference to Exhibit 10.31 to our Annual Report on Form 10-K for the year ended December 28, 2018).
10.17#	Amendment to Integer Holdings Corporation 2016 Stock Incentive Plan and Integer Holdings Corporation 2011 Stock Incentive Plan.
10.18#	Form of Restricted Stock Award Agreement (incorporated by reference to Exhibit 10.15 to our Annual Report on Form 10-K for the year ended January 3, 2014).
10.19#	Form of Performance-Based Restricted Stock Units Award Agreement (incorporated by reference to Exhibit 10.3 to our Quarterly Report on Form 10-Q for the period ended March 31, 2017).
10.20#	Form of Nonqualified Stock Option Award Letter (incorporated by reference to Exhibit 10.1 to our Quarterly Report on Form 10-Q for the period ended March 31, 2017).
10.21#	Form of Restricted Stock Units Award Letter (incorporated by reference to Exhibit 10.2 to our Quarterly Report on Form 10-Q for the period ended March 31, 2017).
10.22#	Form of Time-Based Restricted Stock Units Award Agreement (for awards granted on or after February 28, 2019) (incorporated by reference to Exhibit 10.1 to our Quarterly Report on Form 10-Q for the period ended March 29, 2019).
10.23#	Form of Financial Performance Restricted Stock Units Award Agreement (for awards granted on or after February 28, 2019) (incorporated by reference to Exhibit 10.2 to our Quarterly Report on Form 10-Q for the period ended March 29, 2019).
10.24#	Form of Market-based Performance Restricted Stock Units Award Agreement (for awards granted on or after February 28, 2019) (incorporated by reference to Exhibit 10.3 to our Quarterly Report on Form 10-Q for the period ended March 29, 2019).
10.25#	Form of Time-Based Restricted Stock Units Award Agreement for Joseph Dziedzic (for awards granted on or after February 28, 2019) (incorporated by reference to Exhibit 10.4 to our Quarterly Report on Form 10-Q for the period ended March 29, 2019).
10.26#	Form of Financial Performance Restricted Stock Units Award Agreement for Joseph Dziedzic (for awards granted on or after February 28, 2019) (incorporated by reference to Exhibit 10.5 to our Quarterly Report on Form 10-Q for the period ended March 29, 2019).
10.27#	Form of Market-based Performance Restricted Stock Units Award Agreement for Joseph Dziedzic (for awards granted on or after February 28, 2019) (incorporated by reference to Exhibit 10.6 to our Quarterly Report on Form 10-Q for the period ended March 29, 2019).
10.28#	Form of Restricted Stock Unit Agreement for Non-Employee Directors (incorporated by reference to Exhibit 10.7 to our Quarterly Report on Form 10-Q for the period ended March 29, 2019).
10.29#*	Form of Time-Based Restricted Stock Units Award Agreement (for awards granted on or after January 1, 2020).
10.30#*	Form of Financial Performance Restricted Stock Units Award Agreement (for awards granted on or after January 1, 2020).
10.31#*	Form of Market-Based Performance Restricted Stock Units Award Agreement (for awards granted on or after January 1, 2020).
10.32#*	Form of Time-Based Restricted Stock Units Award Agreement for Joseph Dziedzic (for awards granted on or after January 1, 2020).
10.33#*	Form of Financial Performance Restricted Stock Units Award Agreement for Joseph Dziedzic (for awards granted on or after January 1, 2020).
10.34#*	Form of Market-Based Performance Restricted Stock Units Award Agreement for Joseph Dziedzic (for awards granted on or after January 1, 2020).
10.35#	Form of Change of Control Agreement between Integer Holdings Corporation and its executive officers (incorporated by reference to Exhibit 10.8 to our Annual Report on Form 10-K for the year ended December 28, 2012).

EXHIBIT NUMBER	DESCRIPTION
10.36#	Employment Agreement, dated July 16, 2017, between Integer Holdings Corporation and Joseph W. Dziedzic (incorporated by reference to Exhibit 10.1 to our Current Report on Form 8-K filed on July 17, 2017).
10.37#	Employment Offer Letter, dated September 14, 2018, between Integer Holdings Corporation and Jason Garland (incorporated by reference to Exhibit 10.1 to our Quarterly Report on Form 10-Q for the period ended September 28, 2018).
10.38#	Employment Offer Letter, dated November 30, 2017, between Integer Holdings Corporation and Kirk Thor (incorporated by reference to Exhibit 10.1 to our Quarterly Report on Form 10-Q for the period ended June 28, 2019).
10.39#*	Employment Offer Letter, dated December 14, 2015, between Integer Holdings Corporation and Joseph Flanagan.
10.40#*	Separation Agreement and Release, effective as of January 13, 2020, between Antonio Gonzalez and Integer Holdings Corporation.
21.1*	Subsidiaries of Integer Holdings Corporation
23.1*	Consent of Independent Registered Public Accounting Firm
31.1*	Certification of Chief Executive Officer pursuant to Rule 13a-14(a) of the Securities Exchange Act.
31.2*	Certification of Chief Financial Officer pursuant to Rule 13a-14(a) of the Securities Exchange Act.
32.1**	Certification of Chief Executive Officer and Chief Financial Officer pursuant to 18 U.S.C. Section 1350 as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101.INS*	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*	XRBL Taxonomy Extension Schema Document
101.CAL*	XBRL Taxonomy Extension Calculation Linkbase Document
101.LAB*	XBRL Taxonomy Extension Labels Linkbase Document
101.PRE*	XBRL Taxonomy Extension Presentation Linkbase Document
101.DEF*	XBRL Taxonomy Extension Definition Linkbase Document
104	Cover Page Interactive Data File (embedded within the Inline XBRL document and included in Exhibit 101)

* - Filed herewith.

** - Furnished herewith.

- Indicates exhibits that are management contracts or compensation plans or arrangements required to be filed pursuant to Item 15(b) of Form 10-K.

ITEM 16. FORM 10-K SUMMARY

None.

SIGNATURES

Pursuant to the requirements of Sections 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.

INTEGER HOLDINGS CORPORATION

Dated: February 20, 2020

By /s/ Joseph W. Dziedzic
Joseph W. Dziedzic (Principal Executive Officer)
President and Chief Executive Officer

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 date indicated.

Signature	Title	Date
/s/ Joseph W. Dziedzic Joseph W. Dziedzic	President, Chief Executive Officer and Director (Principal Executive Officer)	February 20, 2020
/s/ Jason K. Garland Jason K. Garland	Executive Vice President and Chief Financial Officer (Principal Financial Officer)	February 20, 2020
/s/ Tom P. Thomas Tom P. Thomas	Vice President, Corporate Controller (Principal Accounting Officer)	February 20, 2020
/s/ Bill R. Sanford Bill R. Sanford	Chairman	February 20, 2020
/s/ Pamela G. Bailey Pamela G. Bailey	Director	February 20, 2020
/s/ James F. Hinrichs James F. Hinrichs	Director	February 20, 2020
/s/ Jean M. Hobby Jean M. Hobby	Director	February 20, 2020
/s/ M. Craig Maxwell M. Craig Maxwell	Director	February 20, 2020
/s/ Filippo Passerini Filippo Passerini	Director	February 20, 2020
/s/ Peter H. Soderberg Peter H. Soderberg	Director	February 20, 2020
/s/ Donald J. Spence Donald J. Spence	Director	February 20, 2020
/s/ William B. Summers, Jr. William B. Summers, Jr.	Director	February 20, 2020

EXHIBIT 21.1

SUBSIDIARIES OF INTEGER HOLDINGS CORPORATION

Subsidiary	Jurisdiction of
Accellent LLC	Colorado
Brivant Limited, d/b/a Lake Region Medical	Ireland
Centro de Construcción de Cardioestimuladores del Uruguay SA	Uruguay
Electrochem Solutions, Inc.	Massachusetts
Integer EBDO SA	Switzerland
Greatbatch Ltd., d/b/a Greatbatch Medical	New York
Greatbatch Medical, S. de R.L. de C.V.	Mexico
Greatbatch Medical SA	Switzerland
Greatbatch MCSO, S. de R.L. de C.V	Mexico
Greatbatch Netherlands B.V.	Netherlands
Integer Europe GmbH	Switzerland
Integer Finance GmbH	Switzerland
Integer Ireland Medical Limited	Ireland
Lake Region Manufacturing, Inc., d/b/a Lake Region Medical	Minnesota
Lake Region Medical Limited	Ireland
Lake Region Medical, Inc., d/b/a Lake Region Medical	Maryland
Lake Region Medical Holdings Limited	Ireland
Lake Region Medical Sdn. Bhd.	Malaysia
Lake (Shanghai) Medical Device Trading Co., Ltd.	China
Venusa de Mexico, S. de R.L. de C.V.	Mexico
Venusa, Ltd	New York

EXHIBIT 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in Registration Statement Nos. 333-61476, 333-97209, 333-129002, 333-143519, 333-161159, 333-174559, 333-184604, 333-196320, and 333-211609 on Form S-8 and Registration Statement No. 333-210967 on Form S-3 of our reports dated February 20, 2020, relating to the financial statements of Integer Holdings Corporation (the "Company"), and the effectiveness of the Company's internal control over financial reporting appearing in this Annual Report on Form 10-K for the year ended December 31, 2019.

/s/ Deloitte & Touche LLP

Williamsville, New York
February 20, 2020

EXHIBIT 31.1

CERTIFICATION

I, Joseph W. Dziedzic, certify that:

1. I have reviewed this annual report on Form 10-K for the fiscal year ended December 31, 2019 of Integer Holdings Corporation;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by the 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.
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 auditor and the audit committee of 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.

Dated: February 20, 2020

/s/ Joseph W. Dziedzic

Joseph W. Dziedzic
President and Chief Executive Officer
(Principal Executive Officer)

EXHIBIT 31.2

CERTIFICATION

I, Jason K. Garland, certify that:

1. I have reviewed this annual report on Form 10-K for the fiscal year ended December 31, 2019 of Integer Holdings Corporation;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by the 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.
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 auditor and the audit committee of 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.

Dated: February 20, 2020

/s/ Jason K. Garland

Jason K. Garland
Executive Vice President and Chief Financial Officer
(Principal Financial Officer)

EXHIBIT 32.1

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

Pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, each of the undersigned officers of Integer Holdings Corporation (the "Company"), does hereby certify, to such officer's knowledge, that:

The Annual Report on Form 10-K for the fiscal year ended December 31, 2019 (the "Form 10-K") of the Company fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934 and the information contained in the Form 10-K fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: February 20, 2020

/s/ Joseph W. Dziedzic

Joseph W. Dziedzic
President and Chief Executive Officer
(Principal Executive Officer)

Dated: February 20, 2020

/s/ Jason K. Garland

Jason K. Garland
Executive Vice President and Chief Financial Officer
(Principal Financial Officer)

Leadership Team

Joseph W. Dziedzic
President and Chief Executive Officer

Jason K. Garland
Executive Vice President and
Chief Financial Officer

Joel Becker
President, CRM & Neuromodulation

Jennifer M. Bolt
Senior Vice President,
Global Operations

Anthony Borowicz
Senior Vice President,
Strategy, Business Development
and Investor Relations

Joseph Flanagan
Executive Vice President,
Quality and Regulatory Affairs

Elizabeth Giddens
Senior Vice President, General
Counsel, Chief Ethics and Compliance
Officer and Corporate Secretary

Carter Houghton
President, Electrochem and
Power Solutions

Payman Khales
President,Cardio & Vascular

Kirk Thor
Executive Vice President,
Chief Human Resources Officer

Board of Directors

Pamela G. Bailey
Retired President and Chief Executive
Officer, The Grocery Manufacturers
Association

Joseph W. Dziedzic
President and Chief Executive Officer,
Integer Holdings Corporation

James F. Hinrichs
Former Chief Financial Officer,
Alere and CareFusion

Jean Hobby
Retired Partner,
PricewaterhouseCoopers, LLP

M. Craig Maxwell
Vice President and Chief
Technology and Innovation Officer,
Parker Hannifin Corporation

Filippo Passerini
Retired Group President and
Chief Information Officer,
Procter & Gamble Company

Bill R. Sanford,
Chairman Founder and Chairman,
Symark LLC

Peter H. Soderberg
Managing Partner,
Worthy Ventures Resources, LLC

Donald J. Spence
Retired President and Chief Executive
Officer, Ebb Therapeutics

William B. Summers, Jr.
Retired Chairman and Chief Executive
Officer, McDonald Investments, Inc.

Investor Information

Stock Exchange Listing
NYSE: ITGR

Global Headquarters
5830 Granite Parkway, Suite 1150
Plano, TX 75024

Independent Registered Public Accounting Firm
Deloitte & Touche LLP
Williamsville, NY

Investor Relations
Anthony Borowicz
Senior Vice President,
Strategy, Business Development
and Investor Relations
(716) 759-5809

You may also contact us by sending an email to IR@integer.net or by visiting the Investor Relations section of the Company's website at investor.integer.net. The Company's publicly filed reports, including financial statements, are available on the Securities and Exchange Commission's EDGAR system (www.sec.gov).

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