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

FORM 10-K

(Mark One)

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

For the fiscal year ended December 28, 2018

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 001-37961

ICHOR HOLDINGS, LTD.

(Exact name of registrant as specified in its charter)

Cayman Islands	**001-37961**	**Not Applicable**
(State or other jurisdiction of incorporation)	**(Commission File Number)**	**(IRS Employer Identification No.)**

3185 Laurelview Ct.
Fremont, California 94538
(Address of principal executive offices, including Zip Code)

(510) 897-5200
(Registrant's telephone number, including area code)

Not Applicable
(Former name or former address, if changed since last report)

Title of each class	Name of exchange on which registered
Ordinary Shares, $0.0001 par value	The NASDAQ Stock Market, LLC

Securities registered pursuant to Section 12(g) of the Act:
None

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

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

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

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§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 if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§229.405 of this chapter) is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. ☐

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

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

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

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

There were 22,369,135 ordinary shares, $0.0001 par value, outstanding as of March 1, 2019. The aggregate market value of voting ordinary shares held by non-affiliates was $534,635,184 as of June 29, 2018, the last business day of our most recently completed second fiscal quarter.

DOCUMENTS INCORPORATED BY REFERENCE

The information required by Part III of Form 10-K is incorporated herein by reference to the registrant's definitive Proxy Statement relating to its 2019 General Meeting, which will be filed with the Securities and Exchange Commission within 120 days after the end of the registrant's fiscal year.

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CAUTIONARY STATEMENT CONCERNING FORWARD-LOOKING STATEMENTS

This report contains forward-looking statements within the meaning of the federal securities laws. All statements other than statements of historical fact included in this report are forward-looking statements. These statements relate to analyses and other information, which are based on forecasts of future results and estimates of amounts not yet determinable. These statements also relate to our future prospects, developments and business strategies. These forward-looking statements are identified by the use of terms and phrases such as "anticipate," "believe," "could," "estimate," "expect," "intend," "may," "plan," "predict," "project," "will" and similar terms and phrases, including references to assumptions. However, these words are not the exclusive means of identifying such statements. These statements are contained in many sections of this report, including those entitled "Business" and "Management's Discussion and Analysis of Financial Condition and Results of Operations." Although we believe that our plans, intentions and expectations reflected in or suggested by such forward-looking statements are reasonable, we cannot assure you that we will achieve those plans, intentions or expectations. All forward-looking statements are subject to risks and uncertainties that may cause actual results to differ materially from those that we expected.

Important factors that could cause actual results to differ materially from our expectations, or cautionary statements, are disclosed under the sections entitled "Risk Factors" and "Management's Discussion and Analysis of Financial Condition and Results of Operations" in this report. All written and oral forward-looking statements attributable to us, or persons acting on our behalf, are expressly qualified in their entirety by the cautionary statements contained in this report under the heading "Risk Factors," as well as other cautionary statements that are made from time to time in our other filings with the Securities and Exchange Commission and public communications. You should evaluate all forward-looking statements made in this report in the context of these risks and uncertainties.

We caution you that the important factors referenced above may not contain all of the factors that are important to you. In addition, we cannot assure you that we will realize the results or developments we expect or anticipate or, even if substantially realized, that they will result in the consequences or affect us or our operations in the way we expect. The forward-looking statements included in this report are made only as of the date hereof. We undertake no obligation to publicly update or revise any forward-looking statement as a result of new information, future events or otherwise, except as otherwise required by law.

PART I

ITEM 1. BUSINESS

Unless expressly indicated or the context requires otherwise, the terms “Ichor,” “Company,” “we,” “us,” “our,” and similar terms in this report refer to Ichor Holdings, Ltd. and its consolidated subsidiaries.

We use a 52 or 53 week fiscal year ending on the last Friday in December. The following table details our fiscal periods included elsewhere in this report. All references to fiscal years or quarters relate to our fiscal period as so detailed.

Fiscal Period	Period Ending	Weeks in Period
Fiscal Year 2018:	December 28, 2018	52
First Quarter	March 30, 2018	13
Second Quarter	June 29, 2018	13
Third Quarter	September 28, 2018	13
Fourth Quarter	December 28, 2018	13
Fiscal Year 2017:	December 29, 2017	52
First Quarter	March 31, 2017	13
Second Quarter	June 30, 2017	13
Third Quarter	September 29, 2017	13
Fourth Quarter	December 29, 2017	13
Fiscal Year 2016:	December 30, 2016	53
First Quarter	March 25, 2016	13
Second Quarter	June 24, 2016	13
Third Quarter	September 23, 2016	13
Fourth Quarter	December 30, 2016	14
Fiscal Year 2015	December 25, 2015	52

Company Overview

We are a leader in the design, engineering and manufacturing of critical fluid delivery subsystems and components for semiconductor capital equipment. Our product offerings include gas and chemical delivery subsystems, collectively known as fluid delivery subsystems, which are key elements of the process tools used in the manufacturing of semiconductor devices. Our gas delivery subsystems deliver, monitor and control precise quantities of the specialized gases used in semiconductor manufacturing processes such as etch and deposition. Our chemical delivery subsystems precisely blend and dispense the reactive liquid chemistries used in semiconductor manufacturing processes such as chemical-mechanical planarization, electroplating, and cleaning. We also manufacture precision machined components, weldments, and proprietary products for use in fluid delivery systems for direct sales to our customers. This vertically integrated portion of our business is primarily focused on metal and plastic parts that are used in gas and chemical systems, respectively.

Fluid delivery subsystems ensure accurate measurement and uniform delivery of specialty gases and chemicals at critical steps in the semiconductor manufacturing processes. Any malfunction or material degradation in fluid delivery reduces yields and increases the likelihood of manufacturing defects in these processes. Most OEMs outsource all or a portion of the design, engineering and manufacturing of their gas delivery subsystems to a few specialized suppliers, including us. Additionally, many OEMs are also increasingly outsourcing the design, engineering and manufacturing of their chemical delivery subsystems due to the increased fluid expertise required to manufacture these subsystems. Outsourcing these subsystems has allowed OEMs to leverage the suppliers’ highly specialized engineering, design and production skills while focusing their internal resources on their own value-added processes. We believe that this outsourcing trend has enabled OEMs to reduce their costs and development time, as well as provide growth opportunities for specialized subsystems suppliers like us.

Our goal is to be a leading supplier of outsourced fluid delivery subsystems and components to OEMs engaged in manufacturing capital equipment to produce semiconductors and to leverage our technology and products to expand our addressable markets. To achieve this goal, we engage with our customers early in their design and development processes and utilize our deep engineering resources and operating expertise to jointly create innovative and advanced solutions that meet the current and future needs of our customers. These collaborations frequently involve our engineers working at our customers' sites and serving as an extension of our customers' product design teams. We employ this approach with three of the largest manufacturers of semiconductor capital equipment in the world. We believe this approach enables us to design subsystems that meet the precise specifications our customers demand, allows us to often be the sole supplier of these subsystems during the initial production ramp and positions us to be the preferred supplier for the full five to ten-year lifespan of the process tool.

The broad technical expertise of our engineering team, coupled with our early customer engagement approach, enables us to offer innovative and reliable solutions to complex fluid delivery challenges. With two decades of experience developing complex fluid delivery subsystems and meeting the constantly changing production requirements of leading semiconductor OEMs, we have developed expertise in fluid delivery that we offer to our OEM customers. In addition, our capital efficient model and the integration of our business systems with those of our customers provides us the flexibility to fulfill increased demand and meet changing customer requirements with relatively low levels of capital expenditures. With an aim to superior customer service, we have a global footprint with many facilities strategically located in close proximity to our customers. We have long standing relationships with top tier OEM customers, including Lam Research, Applied Materials, and ASML, which were our three largest customers by sales in 2018.

We grew our revenue from continuing operations by 26% to $823.6 million in 2018 from $655.9 million in 2017 (hereinafter, all references to "sales" or "revenue" relates to net sales from continuing operations, unless explicitly stated otherwise). We generated net income from continuing operations of $57.9 million, $56.9 million, and $20.8 million in 2018, 2017, and 2016, respectively. We generated adjusted net income from continuing operations of $75.1 million, $65.1 million, and $31.6 million in 2018, 2017, and 2016, respectively. See *Item 7 – Management's Discussion and Analysis of Financial Condition and Results of Operations, Non-GAAP Results* for a discussion of adjusted net income from continuing operations, an accompanying presentation of the most directly comparable financial measure calculated in accordance with generally accepted accounting principles in the United States, net income from continuing operations, and a reconciliation of the differences between adjusted net income from continuing operations and net income from continuing operations.

Our Competitive Strengths

As a leader in the fluid delivery industry, we believe that our key competitive strengths include the following:

Deep Fluids Engineering Expertise

We believe that our engineering team, comprised of chemical engineers, mechanical engineers and software and systems engineers, has positioned us to expand the scope of our solutions, provide innovative subsystems and strengthen our incumbent position at our OEM customers. Many of our engineers are industry veterans and have spent a significant portion of their careers at our customers, bringing first-hand expertise and a heightened understanding of our customers' needs. Our engineering team acts as an extension of our customers' product development teams, providing our customers with technical expertise that is outside of their core competencies.

Early Engagement with Customers on Product Development

We seek to engage with our customers and potential customers very early in their process for new product development. We believe this approach enables us to collaborate on product design, qualification, manufacturing and testing in order to provide a comprehensive, customized solution. Through early engagement during the complex design stages, our engineering team gains early insight into our customers' technology roadmaps which enables us to pioneer innovative and advanced solutions. In many cases our early engagement with our customers enables us to be the sole source supplier when the product is initially introduced.

Long History and Strong Relationships with Top Tier Customers

We have established deep relationships with top tier OEMs such as Lam Research, Applied Materials, and ASML, which were our three largest customers by sales in 2018. Our customers are global leaders by sales in the semiconductor capital equipment industry. Our existing relationships with our customers have enabled us to effectively compete for new fluid delivery subsystems for our customers' next generation products in development. We leverage our deep rooted existing customer relationships with these market leaders to penetrate new business opportunities created through industry consolidation. Our close collaboration with them has contributed to our established market position and several key supplier awards.

Operational Excellence with Scale to Support the Largest Customers

Over our 19 year history of designing and building gas delivery systems, we have developed deep capabilities in operations. We have strategically located our manufacturing facilities near our customers' locations in order to provide fast and efficient responses to new product introductions, and accommodate configuration or design changes late in the manufacturing process. We also added significant capacity in our Singapore facility to support high volume products and will continue to add capacity as needed to support future growth. In addition to providing high quality and reliable fluid delivery subsystems, one of our principal strategies is delivering the lead-times that provide our customers the required flexibility needed in their production processes. We have accomplished this by investing in manufacturing systems and processes and an efficient supply chain. Our focus on operational efficiency and flexibility allows us to reduce manufacturing cycle times in order to respond quickly to customer requests and lead-times that are often less than four weeks.

Capital Efficient and Scalable Business Model

In general, our business is not capital intensive and we are able to grow sales with a low investment in property, plant and equipment. In 2018, 2017, and 2016, our total capital expenditures were $13.9 million, $8.2 million, and $4.3 million, respectively, representing only 1.7%, 1.3%, and 1.1% of sales, respectively. The semiconductor capital equipment market has historically been cyclical. We have structured our business to minimize fixed manufacturing overhead and operating expenses to enable us to grow net income at a higher rate than sales during periods of growth. Conversely, our low fixed cost approach allows us to minimize the impact of cyclical downturns on our net income, but results in a lower level of gross margin leverage or improvement as a percentage of sales in times of increased demand. For example, from 2014 to 2018, sales grew at a compound annual growth rate, or CAGR, of 35% while adjusted net income from continuing operations grew at a CAGR of 64%. Conversely, our low fixed cost approach allows us to minimize the impact of cyclical downturns on our net income, but results in a smaller increase in gross margin as a percentage of sales in times of increased demand.

Our Growth Strategy

Our objective is to enhance our position as a leader in providing fluid delivery solutions, including subsystems, components, and tool refurbishment, to our customers by leveraging our core strengths. The key elements of our growth strategy are:

Grow Our Market Share within Existing Customer Base

We intend to grow our position within our existing customers by continuing to leverage our specialized engineering talent, early collaboration approach with OEMs to foster long-term relationships and expanded product offerings. Each of our customers produces many different process tools for various process steps. At each customer, we are an outsourced supplier of fluid delivery subsystems and components for a subset of their entire process tool offerings. We are constantly looking to expand our market share at our existing customers. We believe that our early collaborative approach with customers positions us to deliver innovative and dynamic solutions, offer timely deployment and meet competitive cost targets, further increasing our market share. Through our acquisitions of a weldment company and a precision machining company in July and December 2017, respectively, a plastic machining & fabrication company in April 2016, and a Korean gas panel supplier in April 2018, we expanded our served market and also entered the market for chemical delivery subsystems for wet process tools where we had only limited engagement in the past. Using this and our existing engineering capability, we developed a liquid delivery module and was qualified on a wet process equipment system at one of our largest customers who is a market leader in this space.

Grow Our Total Available Market at Existing Customers with Expanded Product Offerings

We continue to work with our existing core customers on additional opportunities, including chemical delivery, one of our important potential growth areas. We believe that wet processes, clean and electro chemical deposition, or ECD, that require precise chemical delivery are currently an underpenetrated market opportunity for us. By leveraging our existing customer relationships and strong reputation in fluid mechanics, we intend to increase our chemical delivery module market share and introduce additional related products. Through our acquisitions of a weldment company and a precision machining company in July and December 2017, respectively, a plastic machining & fabrication company in April 2016, and a Korean gas panel supplier in April 2018, we expanded our served market and entered the market for chemical delivery subsystems. The acquisitions allow us to manufacture and assemble the complex plastic and metal products and precision machined components for the semiconductor equipment, aerospace, and general-industrial industries, as well as provide us exposure to and growth opportunities in the Korean semiconductor capital equipment market.

Expand Our Total Customer Base within Fluid Delivery Market

We have expanded our customer base and are currently a supplier of gas delivery systems for a leading lithography system manufacturer, a leading ALD system manufacturer, and a Korean process tool OEM. We continue to actively engage with new customers that are considering outsourcing their gas and chemical delivery needs as well as expanding our components business.

Continue to Improve Our Manufacturing Process Efficiency

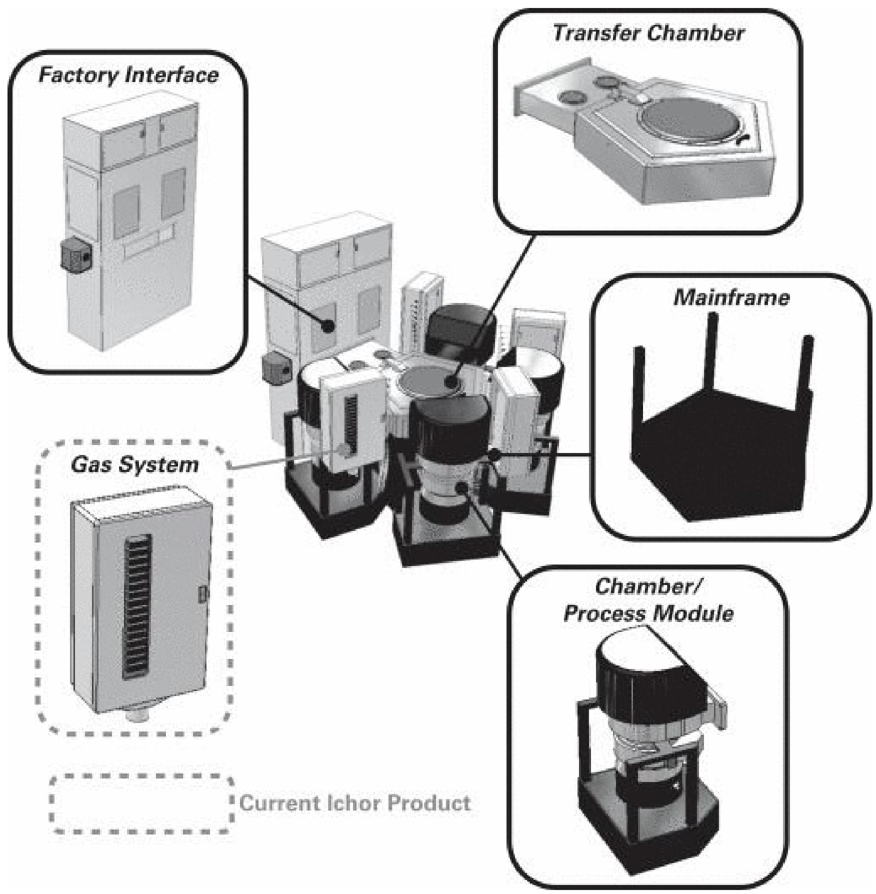
We continually strive to improve our processes to reduce our manufacturing process cycle time, improve our ability to respond to short lead-time and last minute configuration changes, reduce our manufacturing costs, and improve our inventory efficiency requirements in order to improve profitability and make our product offerings more attractive to new and existing customers.

Our Products and Services

We are a leader in the design, engineering and manufacturing of critical fluid delivery subsystems. Our product and service offerings are classified in the following categories:

Gas Delivery Subsystems

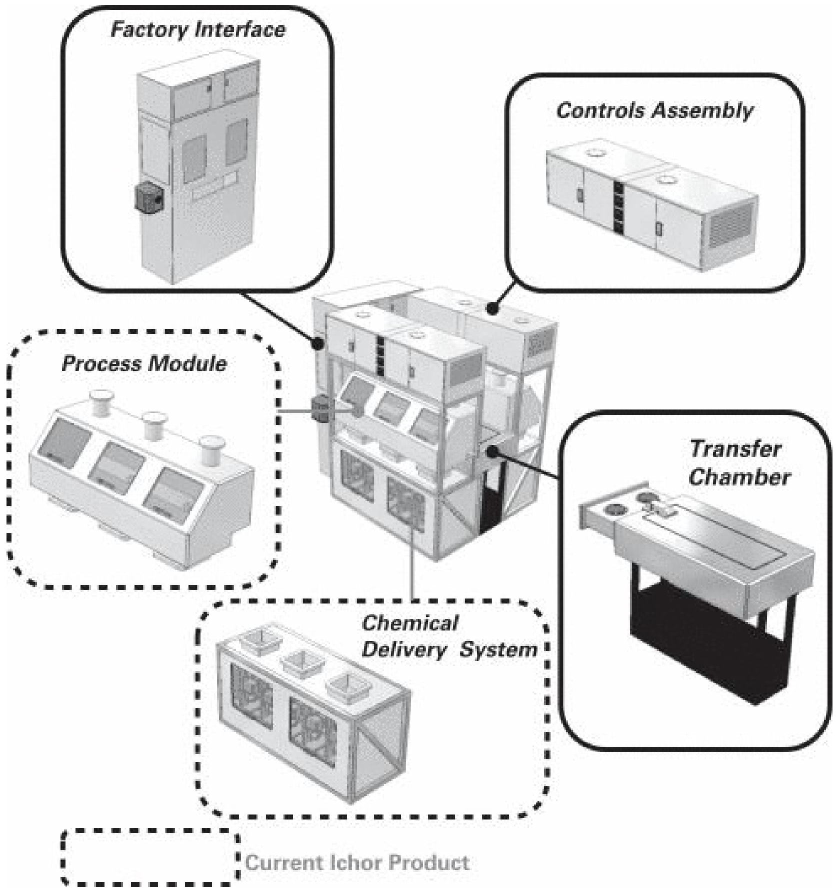
Gas delivery is among the most technologically complex functions in semiconductor capital equipment and is used to deliver, monitor and control precise quantities of the vapors and gases critical to the manufacturing process. Our gas delivery systems consist of a number of gas lines, each controlled by a series of mass flow controllers, regulators, pressure transducers and valves, and an integrated electronic control system. Our gas delivery subsystems are primarily used in equipment for “dry” manufacturing processes, such as etch, chemical vapor deposition, physical vapor deposition, epitaxy and strip.



Chemical Delivery Subsystems

Our chemical delivery subsystems are used to precisely blend and dispense reactive chemistries and colloidal slurries critical to the specific "wet" front-end process, such as wet clean, electro chemical deposition ("ECD"), and chemical-mechanical planarization ("CMP"). In addition to the chemical delivery subsystem, we also develop the process modules that apply the various chemicals directly to the wafer in a process and application-unique manner to create the desired chemical reaction.

The image below shows a typical wet-process front end semiconductor tool, with a chemical delivery subsystem and corresponding application process module highlighted:



Weldments

Our complete offering of weldments support the delivery of fluids through the process tool. We have developed both automated and manual welding process to support world class workmanship on all types of metals needed to support fluid delivery within the semiconductor market. The welded assemblies are used in both wet and dry processes.

Precision Machining

Precision machining provides the ability to supply our customers with components used in our gas delivery systems and weldments, while also providing custom machined solutions throughout customers' equipment. Many of these items are used downstream of the gas system and in process critical applications. Our precision machined products can be used in both wet and dry applications.

History

We were originally incorporated as Celerity, Inc. (“Celerity”) in 1999. Our business of designing and manufacturing critical systems for semiconductor capital equipment manufacturers operated as a stand-alone business until 2009 when Celerity sold the business to a private equity fund. Francisco Partners (“FP”) acquired the business in December 2011 and formed Ichor Holdings, Ltd., an exempt company incorporated in the Cayman Islands, in March 2012 to serve as the parent company as part of a restructuring to accommodate the expansion of our business in Singapore and Malaysia. In April 2012, we acquired Semi Scenic UK Limited to provide refurbishment services for legacy tools. In April 2016, we purchased Ajax for $17.6 million to add chemical delivery subsystem capabilities with existing customers. We completed the initial public offering of our ordinary shares in December 2016. In July 2017 we acquired Cal-Weld, Inc. (“Cal-Weld”) for $56.2 million to add to our gas delivery subsystem and weldment capabilities. In December 2017 we acquired Talon Innovations Corporation (“Talon”) for $137.8 million to add to our gas delivery subsystem, precision machining, and component manufacturing capabilities. In April 2018, we acquired IAN Engineering Co., Ltd. (“IAN”) for $6.5 million to provide us exposure to and growth opportunities in the Korean semiconductor capital equipment market. We intend to continue to evaluate opportunistic acquisitions to supplement our organic growth.

Customers, Sales and Marketing

We market and sell our products directly to equipment OEMs in the semiconductor equipment market. We are dependent upon a small number of customers, as the semiconductor equipment manufacturer market is highly concentrated with four companies accounting for over 80% of all process tool revenues. For 2018, our two largest customers were Lam Research and Applied Materials, which accounted for 56% and 32% of sales, respectively. We do not have long-term contracts that require customers to place orders with us in fixed or minimum volumes, and we generally operate on a purchase order basis with customers.

Our sales and marketing efforts focus on fostering close business relationships with our customers. As a result, we locate many of our account managers near the customer they support. Our sales process involves close collaboration between our account managers and engineering and operations teams. Account managers and engineers work together with customers and in certain cases provide on-site support, including attending customers’ internal meetings related to production and engineering design. Each customer project is supported by our account managers and customer support team, who ensure we are aligned with all of the customer’s quality, cost and delivery expectations.

Operations, Manufacturing and Supply Chain Management

We have developed a highly flexible manufacturing model with cost-effective locations situated nearby the manufacturing facilities of our largest customers. We have facilities in the United States, Singapore, Malaysia, the United Kingdom, and Korea.

Operations

Our product cycle engagements begin by working closely with our customers to outline the solution specifications before design and prototyping even begin. Our design and manufacturing process is highly flexible, enabling our customers to make alterations to their final requirements throughout the design, engineering and manufacturing process. This flexibility results in significantly decreased order-to-delivery cycle times for our customers. For instance, it can take as little as 20 to 30 days for us to manufacture a gas delivery system with fully evaluated performance metrics after receiving an order.

Manufacturing

We are ISO 9001 certified or compliant at each of our manufacturing locations, and our manufactured subsystems and modules adhere to strict design tolerances and specifications. We operate Class 100 and Class 10,000 clean room facilities for customer-specified testing, assembly, and integration of high-purity gas and chemical delivery systems at our locations in Singapore, Oregon, Texas, and Korea. We operate additional facilities in Malaysia, Oregon, and California for weldments and related components used in our gas delivery subsystems, and we operate a separate facility in California for critical components used in our chemical delivery subsystems. We operate facilities in Minnesota and Florida for precision machining of components for sale to our customers and internal use. Our facilities are located in close proximity to our largest customers to allow us to collaborate with them on a regular basis and to enable us to deliver our products on a just-in-time basis, regardless of order size or the degree of changes in the applicable configuration or specifications.

We qualify and test key components that are integrated into our subsystems, and test our fluid delivery subsystems during the design process and again prior to shipping. Our quality management system allows us to access real-time corrective action reports, non-conformance reports, customer complaints and controlled documentation. In addition, our senior management conducts quarterly reviews of our quality control system to evaluate effectiveness. Our customers also complete quarterly surveys which allow us to measure satisfaction.

Supply Chain Management

We use a wide range of components and materials in the production of our gas and chemical delivery systems, including filters, mass flow controllers, regulators, pressure transducers and valves. We obtain components and materials from a large number or sources, including single source and sole source suppliers. We use consignment material and just-in-time stocking programs to better manage our component inventories and better respond to changing customer requirements. These approaches enable us to significantly reduce our inventory levels and maintain flexibility in responding to changes in product demand.

In addition, a key part of our strategy is to identify multiple suppliers with a strong global reach that are located within close proximity to our manufacturing locations.

Technology Development and Engineering

We have a long history of engineering innovation and development. Over time, we have transitioned from being simply an integration engineering and components company into a gas and chemical delivery subsystem leader with complete system engineering and integration expertise. Our industry continues to experience rapid technological change, requiring us to continuously invest in technology and product development and to regularly introduce new products and features that meet our customers' evolving requirements.

We have built a team of fluid delivery experts. As of December 28, 2018, our engineering team consisted of approximately 75 engineers and designers with mechanical, electrical, chemical, systems and software expertise. Our engineers are closely connected with our customers and typically work at our customers' sites and operate as an extension of our customers' design team. We engineer within our customers' processes, design vaults, drawing standards and part numbering systems. These development efforts are designed to meet specific customer requirements in the areas of subsystem design, materials, component selection and functionality. The majority of our sales are generated from projects during which our engineers cooperated with our customer early in the design cycle. Through this early collaborative process, we become an integral part of our customers' design and development processes, and we are able to quickly anticipate and respond to our customers' changing requirements.

Our engineering team also works directly with our suppliers to help them identify new component technologies and make necessary changes in, and enhancements to, the components that we integrate into our products. Our analytical and testing capabilities enable us to evaluate multiple supplier component technologies and provide customers with a wide range of appropriate component and design choices for their gas and chemical delivery systems and other critical subsystems. Our analytical and testing capabilities also help us anticipate technological changes and the requirements in component features for next-generation gas delivery systems and other critical subsystems.

Competition

The markets for our products are very competitive. When we compete for new business, we face competition from other suppliers of gas or chemical delivery subsystems, and in some cases with the internal manufacturing groups of OEMs. While many OEMs have outsourced the design and manufacture of their gas and chemical delivery systems, we would face additional competition if in the future these OEMs elected to develop these systems internally.

The fluid delivery subsystem market is concentrated and we face competition primarily from Ultra Clean Technology, with some competition from regional suppliers. The chemical delivery subsystem, weldment and precision machining industries are fragmented and we face competition from numerous smaller suppliers. In addition, the market for tool refurbishment is fragmented and we compete with many regional competitors. The primary competitive factors we emphasize include:

- early engagement with customers;
- size and experience of engineering staff;
- design-to-delivery cycle times;
- flexible manufacturing capabilities; and
- customer relationships.

We expect our competitors to continue to improve the performance of their current products and to introduce new products or new technologies that could adversely affect sales of our current and future products. In addition, the limited number of potential customers in our industry further intensifies competition. We anticipate that increased competitive pressures may cause intensified price-based competition and we may have to reduce the prices of our products. In addition, we expect to face new competitors as we enter new markets.

Intellectual Property

Our success depends, in part, upon our ability to maintain and protect our technology and products and to conduct our business without infringing the proprietary rights of others. We continue to invest in securing intellectual property protection for our technology and products and protect our technology by, among other things, filing patent applications. We also rely on a combination of trade secrets and confidentiality provisions, and to a much lesser extent, copyrights and trademarks, to protect our proprietary rights. We have historically focused our patent protection efforts in the United States. As of December 28, 2018, we held 47 patents, 19 of which were U.S. patents. While we consider our patents to be valuable assets, we do not believe the success of our business or our overall operations are dependent upon any single patent or group of related patents. In addition, we do not believe that the loss or expiration of any single patent or group of related patents would materially affect our business.

Intellectual property that we develop on behalf of our customers is generally owned exclusively by those customers. In addition, we have agreed to indemnify certain of our customers against claims of infringement of the intellectual property rights of others with respect to our products. Historically, we have not paid any claims under these indemnification obligations, and we do not have any pending indemnification claims against us.

Employees and Labor Relations

As of December 28, 2018, we had approximately 1,305 full-time employees and 185 contract or temporary workers, which allow flexibility as business conditions and geographic demand change. Of our total employees, approximately 75 are engineers, 60 are engaged in sales and marketing, 1,255 are engaged in manufacturing, and 100 perform executive and administrative functions. None of our employees are unionized, but in various countries, local law requires our participation in works councils. We have not experienced any material work stoppages at any of our facilities. We consider our relationship with our employees to be good.

Environmental, Health, and Safety Regulations

Our operations and facilities are subject to federal, state and local regulatory requirements and foreign laws and regulations, relating to environmental, waste management and health and safety matters, including those relating to the release, use, storage, treatment, transportation, discharge, disposal and remediation of contaminants, hazardous substances and wastes, as well as practices and procedures applicable to the construction and operation of our facilities. We believe that our business is operated in substantial compliance with applicable regulations. However, in the future we could incur substantial costs, including cleanup costs, fines or civil or criminal sanctions, or third-party property damage or personal injury claims, in the event of violations or liabilities under these laws and regulations, or non-compliance with the environmental permits required at our facilities. Potentially significant expenditures could be required in order to comply with environmental laws that may be adopted or imposed in the future. We are not aware of any threatened or pending environmental investigations, lawsuits or claims involving us, our operations or our current or former facilities.

Available Information

Our internet address is www.ichorsystems.com. We make a variety of information available, free of charge, at our Investor Relations website, ir.ichorsystems.com. This information includes our Annual Reports on Form 10-K, our Quarterly Reports on Form 10-Q, our Current Reports on Form 8-K, and any amendments to those reports as soon as reasonably practicable after we electronically file those reports with or furnish them to the Securities and Exchange Commission ("SEC"), as well as our Code of Business Ethics and Conduct and other governance documents.

The public may read and copy materials filed by us with the Securities and Exchange Commission, or the SEC, at the SEC's Public Reference Room at 100 F Street, NE Washington, DC 20549. The public may obtain information on the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330. The SEC maintains an internet site that contains reports, proxy and information statements and other information regarding issuers that file documents electronically with the SEC at www.sec.gov.

The contents of these websites, or the information connected to those websites, are not incorporated into this report. References to websites in this report are provided as a convenience and do not constitute, and should not be viewed as, incorporation by reference of the information contained on, or available through, the website.

ITEM 1A. RISK FACTORS

There are many factors that affect our business and the results of operations, some of which are beyond our control. The following is a description of some important factors that may cause the actual results of operations in future periods to differ materially from those currently expected or desired.

Risks Related to Our Business

Our business depends significantly on expenditures by manufacturers in the semiconductor capital equipment industry, which, in turn, is dependent upon the semiconductor device industry. When that industry experiences cyclical downturns, demand for our products and services is likely to decrease, which would likely result in decreased sales. We may also be forced to reduce our prices during cyclical downturns without being able to proportionally reduce costs.

Our business, financial condition and results of operations depend significantly on expenditures by manufacturers in the semiconductor capital equipment industry. In turn, the semiconductor capital equipment industry depends upon the current and anticipated market demand for semiconductor devices. The semiconductor device industry is subject to cyclical and volatile fluctuations in supply and demand and in the past has periodically experienced significant downturns, which often occur in connection with declines in general economic conditions, and which have resulted in significant volatility in the semiconductor capital equipment industry. The semiconductor device industry has also experienced recurring periods of over-supply of products that have had a severe negative effect on the demand for capital equipment used to manufacture such products. We have experienced, and anticipate that we will continue to experience, significant fluctuations in customer orders for our products and services as a result of such fluctuations and cycles. Any downturns in the semiconductor device industry could have a material adverse effect on our business, financial condition and results of operations.

In addition, we must be able to appropriately align our cost structure with prevailing market conditions, effectively manage our supply chain and motivate and retain employees, particularly during periods of decreasing demand for our products. We may be forced to reduce our prices during periods of decreasing demand. While we operate under a low fixed cost model, we may not be able to proportionally reduce all of our costs if we are required to reduce our prices. If we are not able to timely and appropriately adapt to the changes in our business environment, our business, financial condition and results of operations will be materially adversely affected. The cyclical and volatile nature of the semiconductor device industry and the absence of long-term fixed or minimum volume contracts make any effort to project a material reduction in future sales volume difficult.

We rely on a very small number of OEM customers for a significant portion of our sales. Any adverse change in our relationships with these customers could materially adversely affect our business, financial condition and results of operations.

The semiconductor capital equipment industry is highly concentrated and has experienced significant consolidation in recent years. As a result, a relatively small number of OEM customers have historically accounted for a significant portion of our sales, and we expect this trend to continue for the foreseeable future. For 2018, our top two customers accounted for approximately 56% and 32%, respectively, of sales, and we expect that our sales will continue to be concentrated among a very small number of customers. We do not have any long-term contracts that require customers to place orders with us in fixed or minimum volumes. Accordingly, the success of our business depends on the success of our customers and those customers and other OEMs continuing to outsource the manufacturing of critical subsystems and process solutions to us. Because of the small number of OEMs in the markets we serve, a number of which are already our customers, it would be difficult to replace lost sales resulting from the loss of, or the reduction, cancellation or delay in purchase orders by, any one of these customers, whether due to a reduction in the amount of outsourcing they do, their giving orders to our competitors, their acquisition by an OEM who is not a customer or with whom we do less business, or otherwise. We have in the past lost business from customers for a number of these reasons. If we are unable to replace sales from customers who reduce the volume of products and services they purchase from us or terminate their relationship with us entirely, such events could have a material adverse impact on our business, financial condition and results of operations.

Additionally, if one or more of the largest OEMs were to decide to single- or sole-source all or a significant portion of manufacturing and assembly work to a single equipment manufacturer, such a development would heighten the risks discussed above.

Our customers exert a significant amount of negotiating leverage over us, which may require us to accept lower prices and gross margins or increased liability risk in order to retain or expand our market share with them.

By virtue of our largest customers' size and the significant portion of our sales that is derived from them, as well as the competitive landscape, our customers are able to exert significant influence and pricing pressure in the negotiation of our commercial arrangements and the conduct of our business with them. Our customers often require reduced prices or other pricing, quality or delivery commitments as a condition to their purchasing from us in any given period or increasing their purchase volume, which can, among other things, result in reduced gross margins in order to maintain or expand our market share. Our customers' negotiating leverage also can result in customer arrangements that may contain significant liability risk to us. For example, some of our customers require that we provide them indemnification against certain liabilities in our arrangements with them, including claims of losses by their customers caused by our products. Any increase in our customers' negotiating leverage may expose us to increased liability risk in our arrangements with them, which, if realized, may have a material adverse effect on our business, financial condition and results of operations. In addition, new products often carry lower gross margins than existing products for several quarters following their introduction. If we are unable to retain and expand our business with our customers on favorable terms, or if we are unable to achieve gross margins on new products that are similar to or more favorable than the gross margins we have historically achieved, our business, financial condition and results of operations may be materially adversely affected.

The industries in which we participate are highly competitive and rapidly evolving, and if we are unable to compete effectively, our business, financial condition and results of operations could be materially adversely affected.

We face intense competition from other suppliers of gas or chemical delivery subsystems, as well as the internal manufacturing groups of OEMs. Increased competition has in the past resulted, and could in the future result, in price reductions, reduced gross margins or loss of market share, any of which would materially adversely affect our business, financial condition and results of operations. We are subject to significant pricing pressure as we attempt to maintain and increase market share with our existing customers. Our competitors may offer reduced prices or introduce new products or services for the markets currently served by our products and services. These products may have better performance, lower prices and achieve broader market acceptance than our products. OEMs also typically own the design rights to their products. Further, if our competitors obtain proprietary rights to these designs such that we are unable to obtain the designs necessary to manufacture products for our OEM customers, our business, financial condition and results of operations could be materially adversely affected.

Certain of our competitors may have or may develop greater financial, technical, manufacturing and marketing resources than we do. As a result, they may be able to respond more quickly to new or emerging technologies and changes in customer requirements, devote greater resources to the development, promotion, sale and support of their products and services, and reduce prices to increase market share. In addition to organic growth by our competitors, there may be merger and acquisition activity among our competitors and potential competitors that may provide our competitors and potential competitors with an advantage over us by enabling them to expand their product offerings and service capabilities to meet a broader range of customer needs. The introduction of new technologies and new market entrants may also increase competitive pressures.

We are exposed to risks associated with weakness in the global economy and geopolitical instability.

Our business is dependent upon manufacturers of semiconductor capital equipment, whose businesses in turn ultimately depend largely on consumer spending on semiconductor devices. Continuing uncertainty regarding the global economy continues to pose challenges to our business. Economic uncertainty and related factors, including current unemployment levels, uncertainty in European debt markets, geopolitical instability in various parts of the world, fiscal uncertainty in the U.S. economy, market volatility and the slow rate of recovery of many countries from recent recessions, exacerbate negative trends in business and consumer spending and may cause certain of our customers to push out, cancel or refrain from placing orders for products or services, which may reduce sales and materially adversely affect our business, financial condition and results of operations. Difficulties in obtaining capital, uncertain market conditions or reduced profitability may also cause some customers to scale back operations, exit businesses, merge with other manufacturers, or file for bankruptcy protection and potentially cease operations, leading to customers' reduced research and development funding and/or capital expenditures and, in turn, lower orders from our customers and/or additional slow moving or obsolete inventory or bad debt expense for us. These conditions may also similarly affect our key suppliers, which could impair their ability to deliver parts and result in delays for our products or require us to either procure products from higher-cost suppliers, or if no additional suppliers exist, to reconfigure the design and manufacture of our products, and we may be unable to fulfill some customer orders. Any of these conditions or events could have a material adverse effect on our business, financial condition and results of operations.

If we do not keep pace with developments in the industries we serve and with technological innovation generally, our products and services may not be competitive.

Rapid technological innovation in the markets we serve requires us to anticipate and respond quickly to evolving customer requirements and could render our current product offerings, services and technologies obsolete. In particular, the design and manufacturing of semiconductors is constantly evolving and becoming more complex in order to achieve greater power, performance and efficiency with smaller devices. Capital equipment manufacturers need to keep pace with these changes by refining their existing products and developing new products.

We believe that our future success will depend upon our ability to design, engineer and manufacture products that meet the changing needs of our customers. This requires that we successfully anticipate and respond to technological changes in design, engineering and manufacturing processes in a cost-effective and timely manner. If we are unable to integrate new technical specifications into competitive product designs, develop the technical capabilities necessary to manufacture new products or make necessary modifications or enhancements to existing products, our business, financial condition and results of operations could be materially adversely affected.

The timely development of new or enhanced products is a complex and uncertain process which requires that we:

- design innovative and performance-enhancing features that differentiate our products from those of our competitors;
- identify emerging technological trends in the industries we serve, including new standards for our products;
- accurately identify and design new products to meet market needs;
- collaborate with OEMs to design and develop products on a timely and cost-effective basis;
- ramp-up production of new products, especially new subsystems, in a timely manner and with acceptable yields;
- manage our costs of product development and the costs of producing the products that we sell;
- successfully manage development production cycles; and
- respond quickly and effectively to technological changes or product announcements by others.

If we are unsuccessful in keeping pace with technological developments for the reasons above or other reasons, our business, financial condition and results of operations could be materially adversely affected.

We must design, develop and introduce new products that are accepted by OEMs in order to retain our existing customers and obtain new customers.

The introduction of new products is inherently risky because it is difficult to foresee the adoption of new standards, coordinate our technical personnel and strategic relationships and win acceptance of new products by OEMs. We attempt to mitigate this risk by collaborating with our customers during their design and development processes. We cannot, however, assure you that we will be able to successfully introduce, market and cost-effectively manufacture new products, or that we will be able to develop new or enhanced products and processes that satisfy customer needs. In addition, new capital equipment typically has a lifespan of five to ten years, and OEMs frequently specify which systems, subsystems, components and instruments are to be used in their equipment. Once a specific system, subsystem, component or instrument is incorporated into a piece of capital equipment, it will often continue to be purchased for that piece of equipment on an exclusive basis for 18 to 24 months before the OEM generates enough sales volume to consider adding alternative suppliers. Accordingly, it is important that our products are designed into the new systems introduced by the OEMs. If any of the new products we develop are not launched or successful in the market, our business, financial condition and results of operations could be materially adversely affected.

The manufacturing of our products is highly complex, and if we are not able to manage our manufacturing and procurement process effectively, our business, financial condition and results of operations may be materially adversely affected.

The manufacturing of our products is a highly complex process that involves the integration of multiple components and requires effective management of our supply chain while meeting our customers' design-to-delivery cycle time requirements. Through the course of the manufacturing process, our customers may modify design and system configurations in response to changes in their own customers' requirements. In order to rapidly respond to these modifications and deliver our products to our customers in a timely manner, we must effectively manage our manufacturing and procurement process. If we fail to manage this process effectively, we risk losing customers and damaging our reputation. We may also be subject to liability under our agreements with our customers if we or our suppliers fail to re- configure manufacturing processes or components in response to these modifications. In addition, if we acquire inventory in excess of demand or that does not meet customer specifications, we could incur excess or obsolete inventory charges. We have from time to time experienced bottlenecks and production difficulties that have caused delivery delays and quality control problems. These risks are even greater as we seek to expand our business into new subsystems. In addition, certain of our suppliers have been, and may in the future be, forced out of business as a result of the economic environment. In such cases, we may be required to procure products from higher-cost suppliers or, if no additional suppliers exist, reconfigure the design and manufacture of our products. This could materially limit our growth, adversely impact our ability to win future business and have a material adverse effect on our business, financial condition and results of operations.

Defects in our products could damage our reputation, decrease market acceptance of our products and result in potentially costly litigation.

A number of factors, including design flaws, material and component failures, contamination in the manufacturing environment, impurities in the materials used and unknown sensitivities to process conditions, such as temperature and humidity, as well as equipment failures, may cause our products to contain undetected errors or defects. Errors, defects or other problems with our products may:

- cause delays in product introductions and shipments;
- result in increased costs and diversion of development resources;
- cause us to incur increased charges due to unusable inventory;
- require design modifications;
- result in liability for the unintended release of hazardous materials;
- create claims for rework, replacement and/or damages under our contracts with customers, as well as indemnification claims from customers;
- decrease market acceptance of, or customer satisfaction with, our products, which could result in decreased sales and increased product returns; or
- result in lower yields for semiconductor manufacturers.

If any of our products contain defects or have reliability, quality or compatibility problems, our reputation may be damaged and customers may be reluctant to buy our products. We may also face a higher rate of product defects as we increase our production levels in periods of significant growth. Product defects could result in warranty and indemnification liability or the loss of existing customers or impair our ability to attract new customers. In addition, we may not find defects or failures in our products until after they are installed in a manufacturer's fabrication facility. We may have to invest significant capital and other resources to correct these problems. Our current or potential customers also might seek to recover from us any losses resulting from defects or failures in our products. In addition, hazardous materials flow through and are controlled by certain of our products and an unintended release of these materials could result in serious injury or death. Liability claims could require us to spend significant time and money in litigation or pay significant damages.

We may incur unexpected warranty and performance guarantee claims that could materially adversely affect our business, financial condition and results of operations.

In connection with our products and services, we provide various product warranties, performance guarantees and indemnification rights. Warranty or other performance guarantee or indemnification claims against us could cause us to incur significant expense to repair or replace defective products or indemnify the affected customer for losses. In addition, quality issues can have various other ramifications, including delays in the recognition of sales, loss of sales, loss of future sales opportunities, increased costs associated with repairing or replacing products, and a negative impact on our reputation, all of which could materially adversely affect our business, financial condition and results of operations.

Our dependence on a limited number of suppliers may harm our production output and increase our costs, and may prevent us from delivering acceptable products on a timely basis.

Our ability to meet our customers' demand for our products depends upon obtaining adequate supplies of quality components and other raw materials on a timely basis. In addition, our customers often specify components from particular suppliers that we must incorporate into our products. We also use consignment and just-in-time stocking programs, which means we carry very little inventory of components or other raw materials, and we rely on our suppliers to deliver necessary components and raw materials in a timely manner. However, our suppliers are under no obligation to provide us with components or other raw materials. As a result, the loss of or failure to perform by any of our key suppliers could materially adversely affect our ability to deliver products on a timely basis. In addition, if a supplier was unable to provide the volume of components we require on a timely basis and at acceptable prices and quality, we would have to identify and qualify replacements from alternative sources of supply. However, the process of qualifying new suppliers for complex components is also lengthy and could delay our production. We may also experience difficulty in obtaining sufficient supplies of components and raw materials in times of significant growth in our business. If we are unable to procure sufficient quantities of components or raw materials from suppliers, our customers may elect to delay or cancel existing orders or not place future orders, which could have a material adverse effect on our business, financial condition and results of operations.

We are subject to order and shipment uncertainties, and any significant reductions, cancellations or delays in customer orders could have a material adverse effect on our business, financial condition and results of operations.

Our sales are difficult to forecast because we generally do not have a material backlog of unfilled orders and because of the short time frame within which we are often required to manufacture and deliver products to our customers. Most of our sales for a particular quarter depend on customer orders placed during that quarter or shortly before it commences. Our contracts generally do not require our customers to commit to minimum purchase volumes. While most of our customers provide periodic rolling forecasts for product orders, those forecasts do not become binding until a formal purchase order is submitted, which generally occurs only a short time prior to shipment. As a result of the foregoing and the cyclicality and volatility of the industries we serve, it is difficult to predict future orders with precision. Occasionally, we order component inventory and build products in advance of the receipt of actual customer orders. Customers may cancel order forecasts, change production quantities from forecasted volumes or delay production for reasons beyond our control. Furthermore, reductions, cancellations or delays in customer order forecasts usually occur without penalty to, or compensation from, the customer. Reductions, cancellations or delays in forecasted orders could cause us to hold inventory longer than anticipated, which could reduce our gross profit, restrict our ability to fund our operations and result in unanticipated reductions or delays in sales. If we do not obtain orders as we anticipate, we could have excess components for a specific product and/or finished goods inventory that we would not be able to sell to another customer, likely resulting in inventory write-offs, which could have a material adverse effect on our business, financial condition and results of operations.

Because our customers generally require that they qualify our engineering, documentation, manufacturing and quality control procedures, our ability to add new customers quickly is limited.

We are generally required to qualify and maintain our status as a supplier for each of our customers. This is a time-consuming process that involves the inspection and approval by a customer of our engineering, documentation, manufacturing and quality control procedures before that customer will place orders with us. Our ability to lessen the adverse effect of any loss of, or reduction in sales to, an existing customer through the rapid addition of one or more new customers is limited in part because of these qualification requirements. Consequently, the risk that our business, financial condition and results of operations would be materially adversely affected by the loss of, or any reduction in orders by, any of our significant customers is increased. Moreover, if we lost our existing status as a qualified supplier to any of our customers, such customer could cancel its orders from us or otherwise terminate its relationship with us, which could have a material adverse effect on our business, financial condition and results of operations.

We may be subject to interruptions or failures in our information technology systems.

We rely on our information technology systems to process transactions, summarize our operating results and manage our business. Our information technology systems are subject to damage or interruption from power outages, computer and telecommunications failures, computer viruses, cyber-attack or other security breaches, catastrophic events, such as fires, floods, earthquakes, tornadoes, hurricanes, acts of war or terrorism, and usage errors by our employees. If our information technology systems are damaged or cease to function properly, we may have to make a significant investment to fix or replace them, and we may suffer loss of critical data and interruptions or delays in our operations.

We may be the target of attempted cyber-attacks, computer viruses, malicious code, phishing attacks, denial of service attacks and other information security threats. To date, cyber-attacks have not had a material impact on our financial condition, results or business; however, we could suffer material financial or other losses in the future and we are not able to predict the severity of these attacks. Our risk and exposure to these matters remains heightened because of, among other things, the evolving nature of these threats, the current global economic and political environment, our prominent size and scale and our role in the financial services industry, the outsourcing of some of our business operations, the ongoing shortage of qualified cyber-security professionals, and the interconnectivity and interdependence of third parties to our systems. The occurrence of a cyber-attack, breach, unauthorized access, misuse, computer virus or other malicious code or other cyber-security event could jeopardize or result in the unauthorized disclosure, gathering, monitoring, misuse, corruption, loss or destruction of confidential and other information that belongs to us, our customers, our counterparties, third-party service providers or borrowers that is processed and stored in, and transmitted through, our computer systems and networks. The occurrence of such an event could also result in damage to our software, computers or systems, or otherwise cause interruptions or malfunctions in our, our customers', our counterparties' or third parties' operations. This could result in significant losses, loss of customers and business opportunities, reputational damage, litigation, regulatory fines, penalties or intervention, reimbursement or other compensatory costs, or otherwise adversely affect our business, financial condition or results of operations.

The reliability and capacity of our information technology systems is critical to our operations and the implementation of our growth initiatives. Any material disruption in our information technology systems, or delays or difficulties in implementing or integrating new systems or enhancing current systems, could have an adverse effect on our business, and results of operations.

Restrictive covenants under our Credit Facilities may limit our current and future operations. If we fail to comply with those covenants, the lenders could cause outstanding amounts, which are currently substantial, to become immediately due and payable, and we might not have sufficient funds and assets to pay such loans.

As of December 28, 2018, we had $170.6 million of indebtedness outstanding under our term loan facility and $34.2 million of indebtedness outstanding under our revolving credit facility (our "Credit Facilities"). The outstanding amount of our Credit Facilities reflected in our consolidated financial statements included elsewhere in this report is net of $3.9 million of debt issuance costs. We may incur additional indebtedness in the future. Our Credit Facilities contain certain restrictive covenants and conditions, including limitations on our ability to, among other things:

- incur additional indebtedness or contingent obligations;
- create or incur liens, negative pledges or guarantees;
- make investments;
- make loans;
- sell or otherwise dispose of assets;
- merge, consolidate or sell substantially all of our assets;
- make certain payments on indebtedness;
- pay dividends on or make distributions in respect of capital stock or make certain other restricted payments or investments;
- enter into certain agreements that restrict distributions from restricted subsidiaries;
- enter into transactions with affiliates;
- change the nature of our business; and
- amend the terms of our organizational documents.

As a result of these covenants, we may be restricted in our ability to pursue new business opportunities or strategies or to respond quickly to changes in the industries that we serve. A violation of any of these covenants would be deemed an event of default under our Credit Facilities. In such event, upon the election of the lenders, the loan commitments under our Credit Facilities would terminate and the principal amount of the loans and accrued interest then outstanding would be due and payable immediately. A default may also result in the acceleration of any other debt to which a cross-acceleration or cross-default provision applies. In the event our lenders accelerate the repayment of our borrowings, we cannot assure you that we and our subsidiaries would have sufficient funds to repay such indebtedness or be able to obtain replacement financing on a timely basis or at all. These events could force us into bankruptcy or liquidation, which could have a material adverse effect on our business, financial condition and results of operations.

We also may need to negotiate changes to the covenants in the agreements governing our Credit Facilities in the future if there are material changes in our business, financial condition or results of operations, but we cannot assure you that we will be able to do so on terms favorable to us or at all.

Certain of our customers require that we consult with them in connection with specified fundamental changes in our business, and address any concerns or requests such customer may have in connection with a fundamental change. While those customers do not have contractual approval or veto rights with respect to fundamental changes, our failure to consult with such customers or to satisfactorily respond to their requests in connection with any such fundamental change could constitute a breach of contract or otherwise be detrimental to our relationships with such customers.

Certain of our key customers require that we consult with them in connection with specified fundamental changes in our business, including, among other things:

- entering into any new line of business;
- amending or modifying our organizational documents;
- selling all or substantially all of our assets, or merging or amalgamating with a third party;
- incur borrowings in excess of a specific amount;
- making senior management changes;
- entering into any joint venture arrangement; and
- effecting an initial public offering.

These customers do not have contractual approval or veto rights with respect to any fundamental changes in our business. However, our failure to consult with such customers or to satisfactorily respond to their requests in connection with any such fundamental change could constitute a breach of contract or otherwise be detrimental to our relationships with such customers, which could have a material adverse effect on our business, financial condition and results of operations.

We may not be able to generate sufficient cash to service all of our indebtedness, including under our Credit Facilities, and may be forced to take other actions to satisfy our obligations under our indebtedness, which may not be successful.

Our ability to make scheduled payments on or to refinance our indebtedness, including under our Credit Facilities, depends on our financial condition and results of operations, which are subject to prevailing economic and competitive conditions and other factors beyond our control. We may be unable to maintain a level of cash flows from operating activities sufficient to permit us to fund our day-to-day operations or to pay the principal, premium, if any, and interest on our indebtedness. If our cash flows and capital resources are insufficient to fund our debt service obligations, we could face substantial liquidity problems and could be forced to reduce or delay investments and capital expenditures or to sell assets or operations, seek additional capital or restructure or refinance our indebtedness. If we cannot make scheduled payments on our debt, we will be in default and, as a result, the lenders under our Credit Facilities could terminate their commitments to loan money, or foreclose against the assets securing such borrowings, and we could be forced into bankruptcy or liquidation, in each case, which would have a material adverse effect on our business, financial condition and results of operations.

Our business is largely dependent on the know-how of our employees, and we generally do not have an intellectual property position that is protected by patents.

We believe that the success of our business depends in part on our proprietary technology, information, processes and know-how and on our ability to operate without infringing on the proprietary rights of third parties. We rely on a combination of trade secrets and contractual confidentiality provisions and, to a much lesser extent, patents, copyrights and trademarks to protect our proprietary rights. Accordingly, our intellectual property position is more vulnerable than it would be if it were protected primarily by patents. We cannot assure you that we have adequately protected or will be able to adequately protect our technology, that our competitors will not be able to utilize our existing technology or develop similar technology independently, that the claims allowed with respect to any patents held by us will be broad enough to protect our technology or that foreign intellectual property laws will adequately protect our intellectual property rights. If we fail to protect our proprietary rights successfully, our competitive position could suffer. Any future litigation to enforce patents issued to us, to protect trade secrets or know-how possessed by us or to defend ourselves or to indemnify others against claimed infringement of the rights of others could have a material adverse effect on our business, financial condition and results of operations.

Third parties have claimed and may in the future claim we are infringing their intellectual property, which could subject us to litigation or licensing expenses, and we may be prevented from selling our products if any such claims prove successful.

We may in the future receive claims that our products, processes or technologies infringe the patents or other proprietary rights of third parties. In addition, we may be unaware of intellectual property rights of others that may be applicable to our products. Any litigation regarding our patents or other intellectual property could be costly and time-consuming and divert our management and key personnel from our business operations, any of which could have a material adverse effect on our business, financial condition and results of operations. The complexity of the technology involved in our products and the uncertainty of intellectual property litigation increase these risks. Claims of intellectual property infringement may also require us to enter into costly license agreements. However, we may not be able to obtain licenses on terms acceptable to us, or at all. We also may be subject to significant damages or injunctions against the development, manufacture and sale of certain of our products if any such claims prove successful. We also rely on design specifications and other intellectual property of our customers in the manufacture of products for such customers. While our customer agreements generally provide for indemnification of us by a customer if we are subjected to litigation for third-party claims of infringement of such customer's intellectual property, such indemnification provisions may not be sufficient to fully protect us from such claims, or our customers may breach such indemnification obligations to us, which could result in costly litigation to defend against such claims or enforce our contractual rights to such indemnification.

From time to time, we may become involved in other litigation and regulatory proceedings, which could require significant attention from our management and result in significant expense to us and disruptions in our business.

In addition to any litigation related to our intellectual property rights, we may in the future be named as a defendant from time to time in other lawsuits and regulatory actions relating to our business, such as commercial contract claims, employment claims and tax examinations, some of which may claim significant damages or cause us reputational harm. Due to the inherent uncertainties of litigation and regulatory proceedings, we cannot predict the ultimate outcome of any such proceeding. An unfavorable outcome could have a material adverse effect on our business, financial condition and results of operations or limit our ability to engage in certain of our business activities. In addition, regardless of the outcome of any litigation or regulatory proceeding, such proceedings are often expensive, time-consuming and disruptive to normal business operations and require significant attention from our management. As a result, any such lawsuits or proceedings could materially adversely affect our business, financial condition and results of operations.

The technology labor market is very competitive, and our business will suffer if we are unable to hire and retain key personnel.

Our future success depends in part on the continued service of our key executive officers, as well as our research, engineering, sales and manufacturing personnel, most of whom are not subject to employment or non-competition agreements. Competition for qualified personnel in the technology industry is particularly intense, and we operate in geographic locations in which labor markets are competitive. Our management team has significant industry experience and deep customer relationships, and therefore would be difficult to replace. In addition, our business is dependent to a significant degree on the expertise and relationships which only a limited number of engineers possess. Many of these engineers often work at our customers' sites and serve as an extension of our customers' product design teams. The loss of any of our key executive officers or key engineers and other personnel, including our engineers working at our customers' sites, or the failure to attract additional personnel as needed, could have a material adverse effect on our business, financial condition and results of operations and could lead to higher labor costs, the use of less-qualified personnel and the loss of customers. In addition, if any of our key executive officers or other key employees were to join a competitor or form a competing company, we could lose customers, suppliers, know-how and key personnel.

We do not maintain key-man life insurance with respect to any of our employees. Our business will suffer if we are unable to attract, employ and retain highly skilled personnel.

Future acquisitions may present integration challenges, and if the goodwill, indefinite-lived intangible assets and other long-term assets recorded in connection with such acquisitions become impaired, we would be required to record impairment charges, which may be significant.

We have acquired strategic businesses in the past and if we find appropriate opportunities in the future, we may acquire businesses, products or technologies that we believe are strategic. The process of integrating an acquired business, product or technology may produce unforeseen operating difficulties and expenditures, fail to result in expected synergies or other benefits and absorb significant attention of our management that would otherwise be available for the ongoing development of our business. In addition, we may record a portion of the assets we acquire as goodwill, other indefinite-lived intangible assets or finite-lived intangible assets. We do not amortize goodwill and indefinite-lived intangible assets, but rather review them for impairment on an annual basis or whenever events or changes in circumstances indicate that their carrying value may not be recoverable. The recoverability of goodwill and indefinite-lived intangible assets is dependent on our ability to generate sufficient future earnings and cash flows. Changes in estimates, circumstances or conditions, resulting from both internal and external factors, could have a significant impact on our fair valuation determination, which could then have a material adverse effect on our business, financial condition and results of operations.

Our quarterly sales and operating results fluctuate significantly from period to period, and this may cause volatility in our share price.

Our quarterly sales and operating results have fluctuated significantly in the past, and we expect them to continue to fluctuate in the future for a variety of reasons, including the following:

- demand for and market acceptance of our products as a result of the cyclical nature of the industries we serve or otherwise, often resulting in reduced sales during industry downturns and increased sales during periods of industry recovery or growth;
- overall economic conditions;
- changes in the timing and size of orders by our customers;
- strategic decisions by our customers to terminate their outsourcing relationship with us or give market share to our competitors;
- consolidation by our customers;
- cancellations and postponements of previously placed orders;
- pricing pressure from either our competitors or our customers, resulting in the reduction of our product prices or loss of market share;
- disruptions or delays in the manufacturing of our products or in the supply of components or raw materials that are incorporated into or used to manufacture our products, thereby causing us to delay the shipment of products;
- decreased margins for several or more quarters following the introduction of new products, especially as we introduce new subsystems or other products or services;
- changes in design-to-delivery cycle times;
- inability to reduce our costs quickly in step with reductions in our prices or in response to decreased demand for our products;
- changes in our mix of products sold;
- write-offs of excess or obsolete inventory;
- one-time expenses or charges; and
- announcements by our competitors of new products, services or technological innovations, which may, among other things, render our products less competitive.

As a result of the foregoing, we believe that quarter-to-quarter comparisons of our sales and results of operations may not be meaningful and that these comparisons may not be an accurate indicator of our future performance. Changes in the timing or terms of a small number of transactions could disproportionately affect our results of operations in any particular quarter. Moreover, our results of operations in one or more future quarters may fail to meet our guidance or the expectations of securities analysts or investors. If this occurs, we would expect to experience an immediate and significant decline in the trading price of our ordinary shares.

Labor disruptions could materially adversely affect our business, financial condition and results of operations.

As of December 28, 2018, we had approximately 1,305 full time employees and 185 contract or temporary workers worldwide. None of our employees are unionized, but in various countries, local law requires our participation in works councils. While we have not experienced any material work stoppages at any of our facilities, any stoppage or slowdown could cause material interruptions in manufacturing, and we cannot assure you that alternate qualified capacity would be available on a timely basis, or at all. As a result, labor disruptions at any of our facilities could materially adversely affect our business, financial condition and results of operations.

As a global company, we are subject to the risks of doing business internationally, including periodic foreign economic downturns and political instability, which may adversely affect our sales and cost of doing business in those regions of the world.

Foreign economic downturns have adversely affected our business and results of operations in the past and could adversely affect our business and results of operations in the future. In addition, other factors relating to the operation of our business outside of the United States may have a material adverse effect on our business, financial condition and results of operations in the future, including:

- the imposition of governmental controls or changes in government regulations, including tax regulations;
- difficulties in enforcing our intellectual property rights;
- difficulties in developing relationships with local suppliers;
- difficulties in attracting new international customers;
- difficulties in complying with foreign and international laws and treaties;
- restrictions on the export of technology;
- compliance with U.S. and international laws involving international operations, including the Foreign Corrupt Practices Act, export control laws and export license requirements;
- difficulties in achieving headcount reductions due to unionized labor and works councils;
- restrictions on transfers of funds and assets between jurisdictions;
- geo-political instability; and
- trade restrictions and changes in taxes and tariffs.

In the future, we may seek to expand our presence in certain foreign markets or enter emerging markets. Evaluating or entering into an emerging market may require considerable management time, as well as start-up expenses for market development before any significant sales and earnings are generated. Operations in new foreign markets may achieve low margins or may be unprofitable, and expansion in existing markets may be affected by local political, economic and market conditions. As we continue to operate our business globally, our success will depend, in part, on our ability to anticipate and effectively manage these and the other risks noted above. The impact of any one or more of these factors could materially adversely affect our business, financial condition and results of operations.

We are subject to fluctuations in foreign currency exchange rates which could cause operating results and reported financial results to vary significantly from period to period.

The vast majority of our sales are denominated in U.S. Dollars. Many of the costs and expenses associated with our Singapore, Malaysian and U.K. operations are paid in Singapore Dollars, Malaysian Ringgit or British Pounds (or Euros), respectively, and we expect our exposure to these currencies to increase as we increase our operations in those countries. As a result, our risk exposure from transactions denominated in non-U.S. currencies is primarily related to the Singapore Dollar, Malaysian Ringgit, British Pound and Euro. In addition, because the majority of our sales are denominated in the U.S. Dollar, if one or more of our competitors sells to our customers in a different currency than the U.S. Dollar, we are subject to the risk that the competitors' products will be relatively less expensive than our products due to exchange rate effects. We have not historically established transaction-based hedging programs. Foreign currency exchange risks inherent in doing business in foreign countries could have a material adverse effect on our business, financial condition and results of operations.

We are subject to numerous environmental laws and regulations, which could require us to incur environmental liabilities, increase our manufacturing and related compliance costs or otherwise adversely affect our business.

We are subject to a variety of federal, state, local and foreign laws and regulations governing the protection of the environment. These environmental laws and regulations include those relating to the use, storage, handling, discharge, emission, disposal and reporting of toxic, volatile or otherwise hazardous materials used in our manufacturing processes. These materials may have been or could be released into the environment at properties currently or previously owned or operated by us, at other locations during the transport of materials or at properties to which we send substances for treatment or disposal. In addition, we may not be aware of all environmental laws or regulations that could subject us to liability in the United States or internationally. If we were to violate or become liable under environmental laws and regulations or become non-compliant with permits required at some of our facilities, we could be held financially responsible and incur substantial costs, including cleanup costs, fines and civil or criminal sanctions, third-party property damage or personal injury claims.

Failure to maintain effective internal controls in accordance with Section 404 of the Sarbanes-Oxley Act could have a material adverse effect on our business and stock price.

As a publicly traded company, we are required to comply with the SEC's rules implementing Section 302 and 404 of the Sarbanes-Oxley Act, which require management to certify financial and other information in our quarterly and annual reports and provide an annual management report on the effectiveness of controls over financial reporting. Pursuant to the JOBS Act, our independent registered public accounting firm will not be required to attest to the effectiveness of our internal control over financial reporting until the later of the year following our first annual report required to be filed with the SEC or the date we are no longer an emerging growth company, which may be up to five full fiscal years following our initial public offering in December 2016.

If we identify weaknesses in our internal control over financial reporting, are unable to comply with the requirements of Section 404 in a timely manner or to assert that our internal control over financial reporting is effective, or if our independent registered public accounting firm is unable to express an opinion as to the effectiveness of our internal control over financial reporting, investors may lose confidence in the accuracy and completeness of our financial reports and the market price of our common stock could be negatively affected, and we could become subject to investigations by NASDAQ, the SEC or other regulatory authorities, which could require additional financial and management resources.

In the second quarter of 2017, we identified material weaknesses in our internal control over financial reporting and may identify additional material weaknesses in the future that may cause us to fail to meet our reporting obligations or result in material misstatements of our financial statements. If our internal control over financial reporting or our disclosure controls and procedures are not effective, we may not be able to accurately report our financial results, prevent fraud or file our periodic reports in a timely manner, which may cause investors to lose confidence in our reported financial information and may lead to a decline in our share price.

During the second quarter of 2017, we identified a material weakness in our internal control over financial reporting related to ineffective periodic risk assessment over control activities that ensure the ending inventory balances of our Malaysia and Singapore subsidiaries were recorded at the appropriate U.S. Dollar functional currency rate. During our previous consolidation process, we had a manual process that translated these inventory balances into the U.S. Dollar functional currency at incorrect rates for these subsidiaries due to system limitations, and we did not implement a control to reconcile the ending inventory balance at our Malaysia and Singapore subsidiaries to the final inventory balance reported in our consolidated financial statements. This material weakness resulted in an accumulated overstatement of inventory as of March 31, 2017 of approximately $1.8 million. We corrected this overstatement in the second quarter of 2017 with a charge to cost of sales of $1.8 million. Additionally, we re-implemented our Oracle system, which allows for a systems-based calculation of inventory purchases and ending inventory at the proper U.S. Dollar functional currency rates, and implemented a control to reconcile the final Malaysia and Singapore inventory sub-ledger balances to the final balances recorded in consolidation. These improvements to our internal controls, implemented during 2017, were in place and demonstrated a sustained period of effective operation during 2017 to enable management of the Company to conclude the material weakness has been remediated as of December 29, 2017.

If our internal control over financial reporting or our disclosure controls and procedures are not effective, we may not be able to accurately report our financial results, prevent fraud or file our periodic reports in a timely manner, which may cause investors to lose confidence in our reported financial information and may lead to a decline in our stock price.

There are limitations on the effectiveness of controls, and the failure of our control systems may materially and adversely impact us.

We do not expect that disclosure controls or internal controls over financial reporting will prevent all errors and all fraud. A control system, no matter how well designed and operated, can provide only reasonable, not absolute, assurance that the control system's objectives will be met. Further, the design of a control system must reflect the fact that there are resource constraints and the benefits of controls must be considered relative to their costs. Because of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, have been detected. Failure of our control systems to prevent error or fraud could have a material adverse effect on our business, financial condition and results of operations.

Compliance with recently adopted rules of the SEC relating to "conflict minerals" may require us and our suppliers to incur substantial expense and may result in disclosure by us that certain minerals used in products we manufacture are not "DRC conflict free."

Section 1502 of the Dodd-Frank Wall Street Reform and Consumer Protection Act, or the Dodd-Frank Act, required the SEC to promulgate rules requiring disclosure by a public company of any "conflict minerals" (tin, tungsten, tantalum and gold) necessary to the functionality or production of a product manufactured or contracted to be manufactured by such company. The SEC adopted final rules in 2012 which took effect at the end of January 2013. Because we manufacture products which may contain tin, tungsten, tantalum or gold, we will be required under these rules to determine whether those minerals are necessary to the functionality or production of our products and, if so, conduct a country of origin inquiry with respect to all such minerals. If any such minerals may have originated in the Democratic Republic of the Congo, or the DRC, or any of its adjoining countries, or the "covered countries," then we and our suppliers must conduct diligence on the source and chain of custody of the conflict minerals to determine if they did originate in one of the covered countries and, if so, whether they financed or benefited armed groups in the covered countries. Disclosures relating to the products which may contain conflict minerals, the country of origin of those minerals and whether they are "DRC conflict free" must be provided in a Form SD (and accompanying conflict minerals report if one is required to disclose the diligence undertaken by us in sourcing the minerals and our conclusions relating to such diligence). If we are required to submit a conflict minerals report, that report must be audited by an independent auditor pursuant to existing government auditing standards, unless (for the first two years) we are unable to determine whether the minerals are "DRC conflict free." Compliance with this new disclosure rule may be very time consuming for management and our supply chain personnel (as well as time consuming for our suppliers) and could involve the expenditure of significant amounts of money and resources by us and them. Disclosures by us mandated by the new rules which are perceived by the market to be "negative" may cause customers to refuse to purchase our products. We are currently unable to assess the cost of compliance with this rule, and we cannot assure you that such cost will not have a material adverse effect on our business, financial condition and results of operations.

Our business is subject to the risks of earthquakes, fire, power outages, floods, and other catastrophic events, and to interruption by man-made disruptions, such as terrorism.

Our facilities could be subject to a catastrophic loss caused by natural disasters, including fires and earthquakes. If any of our facilities were to experience a catastrophic loss, it could disrupt our operations, delay production and shipments, reduce sales and result in large expenses to repair or replace the facility. In addition, we may experience extended power outages at our facilities. Disruption in supply resulting from natural disasters or other causalities or catastrophic events may result in certain of our suppliers being unable to deliver sufficient quantities of components or raw materials at all or in a timely manner, disruptions in our operations or disruptions in our customers' operations. To the extent that natural disasters or other calamities or causalities should result in delays or cancellations of customer orders, or the delay in the manufacture or shipment of our products, our business, financial condition and results of operations would be adversely affected.

Changes in tax laws, tax rates or tax assets and liabilities could materially adversely affect our financial condition and results of operations.

As a global company, we are subject to taxation in the United States and various other countries. Significant judgment is required to determine and estimate worldwide tax liabilities. Our future annual and quarterly tax rates could be affected by numerous factors, including changes in applicable tax laws, the amount and composition of pre-tax income in countries with differing tax rates or valuation of our deferred tax assets and liabilities. We have significant operations in the United States and our holding company structure includes entities organized in the Cayman Islands, Netherlands, Singapore and Scotland. As a result, changes in applicable tax laws in these jurisdictions could have a material adverse effect on our financial condition and results of operations.

On December 22, 2017, Congress passed the Tax Cuts and Jobs Act (the "Tax Act"). Among a number of significant changes to the U.S. federal income tax rules, the Tax Act reduces the marginal U.S. corporate income tax rate from 35% to 21%, limits the deduction for net interest expense, limits the deduction for net operating losses and eliminates net operating loss carrybacks, modifies or repeals many business deductions and credits, shifts the United States toward a more territorial tax system, and imposes new taxes to combat erosion of the U.S. federal income tax base. Our net deferred tax assets and liabilities will be revalued at the newly enacted U.S. corporate rate, and the impact will be recognized in our tax expense in the year of enactment.

We are also subject to regular examination by the Internal Revenue Service and other tax authorities, and from time to time we initiate amendments to previously filed tax returns. We regularly assess the likelihood of favorable or unfavorable outcomes resulting from these examinations and amendments to determine the adequacy of our provision for income taxes, which requires estimates and judgments. Although we believe our tax estimates are reasonable, we cannot assure you that the tax authorities will agree with such estimates. We may have to engage in litigation to achieve the results reflected in the estimates, which may be time- consuming and expensive. We cannot assure you that we will be successful or that any final determination will not be materially different from the treatment reflected in our historical income tax provisions and accruals, which could materially and adversely affect our financial condition and results of operations.

Risks Related to Ownership of Our Ordinary Shares

The price of our ordinary shares may fluctuate substantially.

You should consider an investment in our ordinary shares to be risky, and you should invest in our ordinary shares only if you can withstand a significant loss and wide fluctuations in the market value of your investment. Some factors that may cause the market price of our ordinary shares to fluctuate, in addition to the other risks mentioned in this report, are:

- our announcements or our competitors' announcements regarding new products or services, enhancements, significant contracts, acquisitions or strategic investments;
- changes in earnings estimates or recommendations by securities analysts, if any, who cover our ordinary shares;
- speculation about our business in the press or investment community;
- failures to meet external expectations or management guidance;
- fluctuations in our quarterly financial results or the quarterly financial results of companies perceived to be similar to us;
- changes in our capital structure or dividend policy, future issuances of securities, sales of large blocks of ordinary shares by our shareholders, our incurrence of additional debt or our failure to comply with the agreements governing our Credit Facilities;
- our decision to enter new markets;
- reputational issues;
- changes in general economic and market conditions in any of the regions in which we conduct our business;
- material litigation or government investigations;
- changes in industry conditions or perceptions; and
- changes in applicable laws, rules or regulations.

In addition, if the market for stocks in our industry or industries related to our industry, or the stock market in general, experiences a loss of investor confidence, the trading price of our ordinary shares could decline for reasons unrelated to our business, financial condition and results of operations. If any of the foregoing occurs, it could cause our share price to fall and may expose us to lawsuits that, even if unsuccessful, could be costly to defend and a distraction to management.

Future sales of our ordinary shares, or the perception in the public markets that these sales may occur, may depress our share price.

We may seek to raise additional capital from time to time in the future, which may involve the issuance of additional ordinary shares, or securities convertible into ordinary shares. Sales of substantial amounts of our ordinary shares in the public market, or the perception that these sales could occur, could adversely affect the price of our ordinary shares and could impair our ability to raise capital through the sale of additional shares.

We are an "emerging growth company" and have elected to comply with reduced public company reporting requirements, which could make our ordinary shares less attractive to investors.

We are an emerging growth company, as defined in the JOBS Act. For as long as we continue to be an emerging growth company, we may choose to take advantage of exemptions from various public company reporting requirements. These exemptions include, but are not limited to, (i) not being required to comply with the auditor attestation requirements of Section 404 of the Sarbanes-Oxley Act, (ii) reduced disclosure obligations regarding executive compensation in our periodic reports, proxy statements and registration statements, and (iii) exemptions from the requirements of holding a nonbinding advisory vote on executive compensation and shareholder approval of any golden parachute payments not previously approved. We could be an emerging growth company for up to five years after the first sale of our ordinary shares pursuant to an effective registration statement under the Securities Act, which fifth anniversary will occur in December 2021. However, if certain events occur prior to the end of such five-year period, including if we become a "large accelerated filer," our annual gross revenue exceeds $1.0 billion or we issue more than $1.0 billion of non-convertible debt in any three-year period, we would cease to be an emerging growth company prior to the end of such five-year period. We have taken advantage of certain of the reduced disclosure obligations regarding executive compensation and may elect to take advantage of other reduced disclosure obligations in our SEC filings. As a result, the information that we provide to holders of our ordinary shares may be different than you might receive from other public reporting companies in which you hold equity interests. We cannot predict if investors will find our ordinary shares less attractive as a result of our reliance on these exemptions. If some investors find our ordinary shares less attractive as a result of any choice we make to reduce disclosure, there may be a less active trading market for our ordinary shares and the price for our ordinary shares may be more volatile.

Under the JOBS Act, emerging growth companies may also elect to delay adoption of new or revised accounting standards until such time as those standards apply to private companies. We have elected not to avail ourselves of this extended transition period for complying with new or revised accounting standards and, therefore, we will be subject to the same new or revised accounting standards as other public companies.

We do not expect to pay any cash dividends for the foreseeable future.

We do not anticipate that we will pay any cash dividends on our ordinary shares for the foreseeable future. Any determination to pay dividends in the future will be at the discretion of our Board of Directors and will depend upon our financial condition, results of operations, contractual restrictions (including those under our Credit Facilities and any potential indebtedness we may incur in the future), restrictions imposed by applicable law, tax considerations and other factors our Board of Directors deems relevant. There can be no assurance that we will pay a dividend in the future or continue to pay any dividend if we do commence paying dividends. Accordingly, realization of a gain on an investment in our ordinary shares will depend on the appreciation of the price of our ordinary shares, which may never occur. Investors seeking cash dividends in the foreseeable future should not purchase our ordinary shares.

Our articles of association contain anti-takeover provisions that could adversely affect the rights of our shareholders.

Our articles of association contain provisions to limit the ability of others to acquire control of our company or cause us to engage in change-of control transactions, including, among other things:

- provisions that authorize our Board of Directors, without action by our shareholders, to issue additional ordinary shares and preferred shares with preferential rights determined by our Board of Directors;
- provisions that permit only a majority of our Board of Directors or the chairman of our Board of Directors to call shareholder meetings and therefore do not permit shareholders to call shareholder meetings;
- provisions that impose advance notice requirements, minimum shareholding periods and ownership thresholds, and other requirements and limitations on the ability of shareholders to propose matters for consideration at shareholder meetings; and
- a staggered board whereby our directors are divided into three classes, with each class subject to re-election once every three years on a rotating basis.

These provisions could have the effect of depriving our shareholders of an opportunity to sell their shares at a premium over prevailing market prices by discouraging third parties from seeking to obtain control of our company in a tender offer or similar transaction. With our staggered Board of Directors, at least two annual meetings of shareholders are generally required in order to effect a change in a majority of our directors. Our staggered Board of Directors can discourage proxy contests for the election of our directors and purchases of substantial blocks of our shares by making it more difficult for a potential acquirer to gain control of our Board of Directors in a relatively short period of time.

The issuance of preferred shares could adversely affect holders of ordinary shares.

Our Board of Directors is authorized to issue preferred shares without any action on the part of holders of our ordinary shares. Our Board of Directors also has the power, without shareholder approval, to set the terms of any such preferred shares that may be issued, including voting rights, dividend rights, and preferences over our ordinary shares with respect to dividends or if we liquidate, dissolve or wind up our business and other terms. If we issue preferred shares in the future that have preference over our ordinary shares with respect to the payment of dividends or upon our liquidation, dissolution or winding up, or if we issue preferred shares with voting rights that dilute the voting power of our ordinary shares, the rights of holders of our ordinary shares or the price of our ordinary shares could be adversely affected.

You may face difficulties in protecting your interests as a shareholder, as Cayman Islands law provides substantially less protection when compared to the laws of the United States.

Our corporate affairs are governed by our amended and restated memorandum and articles of association and by the Companies Law (2013 Revision) and common law of the Cayman Islands. The rights of shareholders to take legal action against our directors and us, actions by minority shareholders and the fiduciary responsibilities of our directors to us under Cayman Islands law are to a large extent governed by the common law of the Cayman Islands. The common law of the Cayman Islands is derived in part from comparatively limited judicial precedent in the Cayman Islands as well as from English common law, which has persuasive, but not binding, authority on a court in the Cayman Islands. The rights of our shareholders and the fiduciary responsibilities of our directors under Cayman Islands law are not as clearly established as they would be under statutes or judicial precedents in the United States. In particular, the Cayman Islands have a less exhaustive body of securities laws as compared to the United States. In addition, Cayman Islands companies may not have standing to initiate a shareholder derivative action before the United States federal courts.

As a result of all of the above, our shareholders may have more difficulty in protecting their interests through actions against us or our officers, directors or major shareholders than would shareholders of a corporation incorporated in a jurisdiction in the United States.

Certain judgments obtained against us by our shareholders may not be enforceable.

We are a Cayman Islands company and a portion our assets are located outside of the United States. As a result, it may be difficult or impossible for you to bring an action against us in the United States in the event that you believe that your rights have been infringed under U.S. federal securities laws or otherwise. Even if you are successful in bringing an action of this kind, the laws of the Cayman Islands may render you unable to enforce a judgment against our assets. There is no statutory recognition in the Cayman Islands of judgments obtained in the United States, although the courts of the Cayman Islands will generally recognize and enforce a non-penal judgment of a foreign court of competent jurisdiction without retrial on the merits.

There can be no assurance that we will not be a passive foreign investment company for any taxable year, which could result in adverse U.S. federal income tax consequences to U.S. Holders of our ordinary shares.

A non-U.S. corporation will be a passive foreign investment company, or PFIC, for any taxable year if either (i) at least 75% of its gross income for such year is passive income or (ii) at least 50% of the value of its assets (based on an average of the quarterly values of the assets) during such year is attributable to assets that produce or are held for the production of passive income. Our PFIC status for any taxable year can be determined only after the close of that year.

Based on the value of our assets and the composition of our income and assets, we do not believe we were treated as a PFIC for U.S. federal income purposes for our taxable year ending December 28, 2018. However, the determination of PFIC status is based on an annual determination that cannot be made until the close of a taxable year, involves extensive factual investigation, including ascertaining the fair market value of all of our assets on a quarterly basis and the character of each item of income that we earn, and is subject to uncertainty in several respects. Accordingly, we cannot assure you that we were not treated as a PFIC for our taxable year ending December 28, 2018, or will not be treated as a PFIC for any future taxable year or that the IRS will not take a contrary position.

If we are a PFIC for any taxable year during which a U.S. person holds ordinary shares, certain adverse U.S. federal income tax consequences could apply to such U.S. person. You are strongly urged to consult your tax advisors as to whether or not we will be a PFIC.

If a U.S. person is treated as owning at least 10% of our shares, such person may be subject to adverse U.S. federal income tax consequences.

If a U.S. person is treated as owning (directly, indirectly or constructively) at least 10% of the value or voting power of our shares, such person may be treated as a "United States shareholder" with respect to each "controlled foreign corporation" in the Company's group (if any). Because our group includes one or more U.S. subsidiaries, certain of our non-U.S. subsidiaries could be treated as controlled foreign corporations (regardless of whether we are or are not treated as a controlled foreign corporation).

A United States shareholder of a controlled foreign corporation may be required to annually report and include in its U.S. taxable income its pro rata share of "Subpart F income," "global intangible low-taxed income" and investments in United States property by controlled foreign corporations, whether or not the Company makes any distributions. An individual that is a United States shareholder with respect to a controlled foreign corporation generally would not be allowed certain tax deductions or foreign tax credits that would be allowed to a United States shareholder that is a U.S. corporation. A failure to comply with these reporting obligations may subject a United States shareholder to significant monetary penalties and may prevent starting of the statute of limitations with respect to such shareholder's U.S. federal income tax return for the year for which reporting was due. We cannot provide any assurances that we will assist investors in determining whether we or any of our current or future non-U.S. subsidiaries are treated as a controlled foreign corporation or whether such investor is treated as a United States shareholder with respect to any of such controlled foreign corporations. In addition, we cannot provide assurances we will furnish to any United States shareholders information that may be necessary to comply with the aforementioned reporting and tax paying obligations.

A U.S. investor should consult its own advisors regarding the potential application of these rules to its investment in the shares.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

Our principal executive office is located at 3185 Laurelview Ct., Fremont, California 94538. As of December 28, 2018, our principal manufacturing and administrative facilities, including our executive offices, comprises approximately 580,700 square feet. All of our facilities are leased, which allows for flexibility as business conditions and geographic demand change. The table below sets forth the approximate square footage of each of our facilities.

Location	Approximate Square Footage
Austin, Texas	25,700
East Blantyre, Scotland	37,700
Fremont, California	62,800
Seoul, Korea	15,200
Osakis, Minnesota	22,300
Sauk Rapids, Minnesota	58,600
Selangor, Malaysia	31,900
Singapore	97,700
Tampa, Florida	32,600
Tualatin, Oregon	143,400
Union City, California	52,800

We believe that our existing facilities and equipment are well maintained, in good operating condition and are adequate to meet our currently anticipated requirements.

ITEM 3. LEGAL PROCEEDINGS

We are currently not a party to any material legal proceedings. However, in the future we may be subject to various legal claims and proceedings which arise in the ordinary course of our business involving claims incidental to our business, including employment-related claims.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

PART II

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

Market Information for Ordinary Shares

The following table sets forth the high and low closing prices per share of our ordinary shares as reported by the NASDAQ for the period indicated.

	High	Low
2018		
Fourth Quarter	$ 20.89	$ 14.51
Third Quarter	$ 25.93	$ 18.99
Second Quarter	$ 26.98	$ 20.53
First Quarter	$ 34.35	$ 21.34
2017		
Fourth Quarter	$ 34.28	$ 23.61
Third Quarter	$ 26.80	$ 18.03
Second Quarter	$ 27.88	$ 17.14
First Quarter	$ 19.83	$ 11.55

Holders of Record

On March 1, 2019, there were 3 holders of record of our ordinary shares. This number does not include shareholders for whom shares are held in "nominee" or "street" name.

Dividends

We do not anticipate that we will pay any cash dividends on our ordinary shares for the foreseeable future. Any determination to pay dividends in the future will be at the discretion of our Board of Directors and will depend upon our financial condition, results of operations, contractual restrictions (including those under our Credit Facilities and any potential indebtedness we may incur in the future), restrictions imposed by applicable law, tax considerations and other factors our Board of Directors deems relevant.

Share Repurchase Program

Information related to repurchases of our ordinary shares during 2018 is as follows:

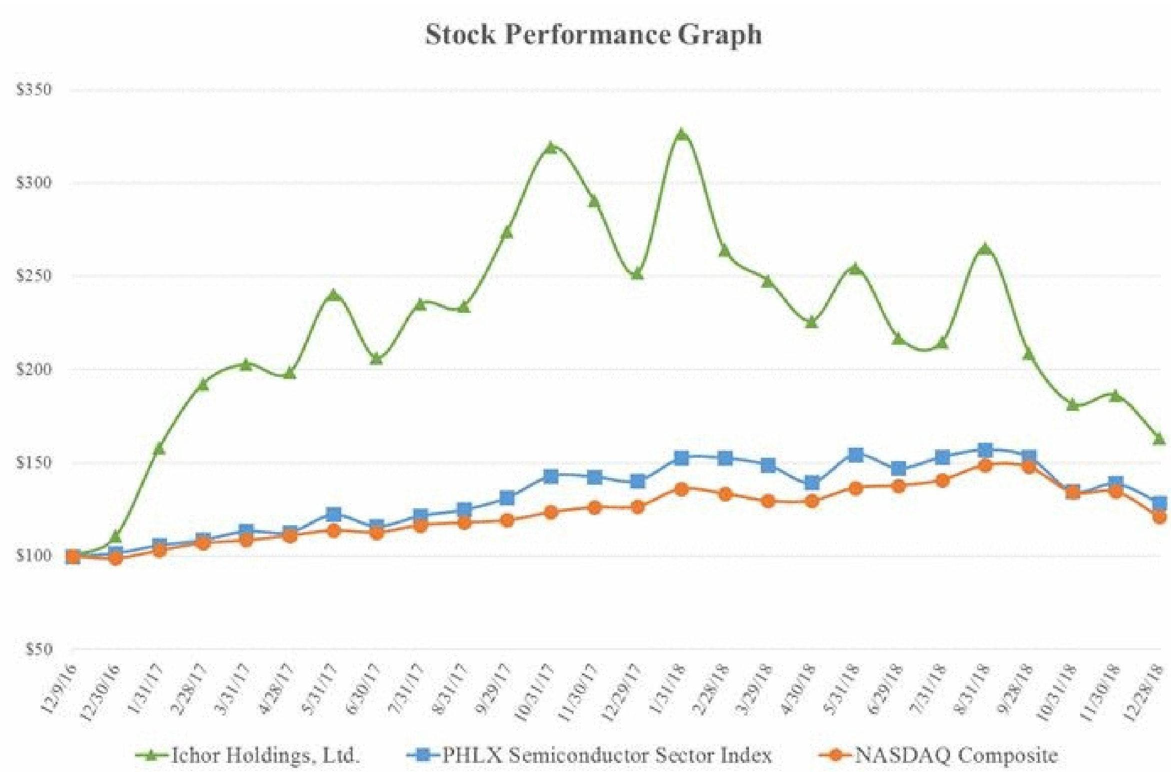
	Total Number of Shares Repurchased	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Program	Amount Available Under Repurchase Program (1)
	(dollars in thousands, except share and per share amounts)			
Amount available at February 15, 2018				$ 50,000
Quarter ended March 30, 2018	195,750	$ 25.54	195,750	$ 45,000
Quarter ended June 29, 2018	1,061,855	$ 23.52	1,061,855	$ 20,030
Board authorization, $50 million increase, August 18, 2018				$ 70,030
Quarter ended September 28, 2018	1,424,359	$ 21.31	1,424,359	$ 39,683
October 2018	1,030,934	$ 19.06	1,030,934	$ 20,030
November 2018	315,007	$ 15.90	315,007	$ 15,021
December 2018	311,624	$ 16.04	311,624	$ 10,021
Year ended December 28, 2018	4,339,529	$ 20.73	4,339,529	$ 10,021

(1) The amounts presented in this column are the remaining total authorized value to be spent after each month's repurchases. On February 15, 2018, we announced that our Board of Directors authorized a $50.0 million share repurchase program under which we may repurchase our ordinary shares in the open market or through privately negotiated transactions, depending on market conditions and other factors. Repurchases were funded with cash on-hand and cash flows from operations. On August 18, 2018, our Board of Directors increased the amount authorized under the share repurchase program by $50.0 million.

Stock Performance Graph

The information included under the heading "Stock Performance Graph" is "furnished" and not "filed" for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, or the Exchange Act, or otherwise subject to the liabilities of that section, nor shall it be deemed to be "soliciting material" subject to Regulation 14A or incorporated by reference in any filing under the Securities Act or the Exchange Act.

Our ordinary shares are listed for trading on the NASDAQ under the symbol "ICHR." The Stock Price Performance Graph set forth below plots the cumulative total shareholder return on a monthly basis of our ordinary shares from December 9, 2016, the date on which our shares began trading, through December 28, 2018, with the cumulative total return of the Nasdaq Composite Index and the PHLX Semiconductor Sector Index over the same period. The comparison assumes $100 was invested on December 9, 2016 in the ordinary shares of Ichor Holdings, Ltd., in the Nasdaq Composite Index, and in the PHLX Semiconductor Sector Index and assumes reinvestment of dividends, if any.



The stock price performance shown on the graph above is not necessarily indicative of future price performance. Information used in the graph was obtained from the Nasdaq Stock Market, a source believed to be reliable, but we are not responsible for any errors or omissions in such information.

ITEM 6. SELECTED FINANCIAL DATA

The following tables present our historical selected consolidated financial data. The selected consolidated statement of operations data for 2018, 2017, and 2016, and the selected balance sheet data as of December 28, 2018 and December 29, 2017, are derived from our audited consolidated financial statements that are included elsewhere in this report. The selected statement of operations data for 2015 and balance sheet data as of December 30, 2016 and December 25, 2015 are derived from our audited consolidated financial statements not included in this report.

Our historical results are not necessarily indicative of the results that may be expected in the future. You should read the selected historical financial data below in conjunction with the section titled "Management's Discussion and Analysis of Financial Condition and Results of Operations" and the financial statements and related notes included elsewhere in this report.

	Year Ended			
	December 28, 2018	December 29, 2017	December 30, 2016	December 25, 2015
	(in thousands, except share and per share amounts)			
Consolidated Statement of Operations Data:				
Net sales	$ 823,611	$ 655,892	$ 405,747	$ 290,641
Cost of sales (1)	687,474	555,131	340,352	242,087
Gross profit	136,137	100,761	65,395	48,554
Operating expenses:				
Research and development (1)	9,355	7,899	6,383	4,813
Selling, general and administrative (1)	47,448	37,802	28,126	24,729
Amortization of intangible assets	15,369	8,880	7,015	6,411
Total operating expenses	72,172	54,581	41,524	35,953
Operating income	63,965	46,180	23,871	12,601
Interest expense	9,987	3,277	4,370	3,831
Other income, net	(241)	(126)	(629)	(46)
Income from continuing operations before income taxes	54,219	43,029	20,130	8,816
Income tax benefit from continuing operations (2)	(3,664)	(13,886)	(649)	(3,991)
Net income from continuing operations	57,883	56,915	20,779	12,807
Discontinued operations:				
Loss from discontinued operations before taxes	—	(722)	(4,077)	(7,406)
Income tax expense (benefit) from discontinued operations	—	(261)	40	(225)
Net loss from discontinued operations	—	(461)	(4,117)	(7,181)
Net income	57,883	56,454	16,662	5,626
Less: Preferred share dividend	—	—	—	(22,127)
Less: Undistributed earnings attributable to preferred shareholders	—	—	(15,284)	—
Net income (loss) attributable to ordinary shareholders	$ 57,883	$ 56,454	$ 1,378	$ (16,501)
Net income (loss) per share from continuing operations attributable to ordinary shareholders: (3)				
Basic	$ 2.34	$ 2.27	$ 1.14	$ (292.39)
Diluted	$ 2.30	$ 2.17	$ 0.87	$ (292.39)
Net income (loss) per share attributable to ordinary shareholders: (3)				
Basic	$ 2.34	$ 2.25	$ 0.92	$ (517.68)
Diluted	$ 2.30	$ 2.15	$ 0.70	$ (517.68)
Shares used to compute net income (loss) from continuing operations per share attributable to ordinary shareholders: (3)				
Basic	24,706,542	25,118,031	1,503,296	31,875
Diluted	25,128,055	26,218,424	1,967,926	31,875
Shares used to compute net income (loss) per share attributable to ordinary shareholders: (3)				
Basic	24,706,542	25,118,031	1,503,296	31,875
Diluted	25,128,055	26,218,424	1,967,926	31,875

	Year Ended			
	December 28, 2018	December 29, 2017	December 30, 2016	December 25, 2015
	(in thousands)			
Consolidated Balance Sheet Data:				
Cash and restricted cash	$ 43,834	$ 69,304	$ 52,648	$ 24,188
Working capital	$ 123,821	$ 131,233	$ 56,020	$ 24,860
Total assets	$ 485,489	$ 557,684	$ 282,491	$ 198,023
Total long-term debt (4)	$ 204,787	$ 189,535	$ 39,830	$ 65,000
Preferred shares	$ —	$ —	$ —	$ 142,728
Total shareholders' equity	$ 198,326	$ 216,762	$ 141,659	$ 74,678

(1) Share-based compensation included in the consolidated statement of operations data above was as follows:

	Year Ended			
	December 28, 2018	December 29, 2017	December 30, 2016	December 25, 2015
	(in thousands)			
Share-Based Compensation Expense:				
Cost of sales	$ 608	$ 118	$ 20	$ 105
Research and development	530	—	—	—
Selling general and administrative	6,439	2,112	3,196	1,013
Total share-based compensation expense	$ 7,577	$ 2,230	$ 3,216	$ 1,118

(2) During 2018, income tax benefit from continuing operations consists primarily of the impact of U.S. operations, offset by discrete tax benefits, including the release of a valuation allowance against our foreign tax credit carryforwards we now expect to realize as a result of additional analysis of the Tax Cuts and Jobs Act and stock option exercises. During 2017, it consisted primarily of the impact of foreign operations, including withholding taxes, offset by a $7.6 million tax benefit as a result of our acquisitions (see *Note 2 – Acquisitions* of our consolidated financial statements included elsewhere in this report), a $5.9 million tax benefit from revaluing our deferred taxes from 35% to 21% due to the Tax Cuts and Jobs Act, and a $1.6 million benefit from re-characterizing intercompany debt to equity between our U.S. and Singapore entities related to the reversal of previously accrued withholding taxes. During 2016 and 2015, it consisted primarily of the impact of foreign operations, including withholding taxes, offset by a tax benefit in 2016 as a result of our acquisition (see *Note 2 – Acquisitions* of our consolidated financial statements included elsewhere in this report).

(3) Please see *Note 14 – Earnings per Share* of our consolidated financial statements included elsewhere in this report for an explanation of the calculations of our actual basic and diluted net income per share and our pro forma unaudited basic and diluted net income per share.

(4) Does not include debt issuance costs of $3.9 million, $2.8 million, $1.9 million, and $2.4 million as of December 28, 2018, December 29, 2017, December 30, 2016, and December 25, 2015, respectively.

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

You should read the following discussion and analysis of our financial condition and results of operations in conjunction with our consolidated financial statements and related notes included elsewhere in this report. The following discussion contains forward-looking statements based upon our current plans, expectations and beliefs that involve risks and uncertainties. Our actual results may differ materially from those anticipated in these forward-looking statements. Factors that could cause or contribute to these differences include those discussed below and elsewhere in this report, particularly in "Risk Factors".

Overview

We are a leader in the design, engineering and manufacturing of critical fluid delivery subsystems for semiconductor capital equipment. Our primary offerings include gas and chemical delivery subsystems, collectively known as fluid delivery subsystems, which are key elements of the process tools used in the manufacturing of semiconductor devices. Our gas delivery subsystems deliver, monitor and control precise quantities of the specialized gases used in semiconductor manufacturing processes such as etch and deposition. Our chemical delivery subsystems precisely blend and dispense the reactive liquid chemistries used in semiconductor manufacturing processes such as electroplating and cleaning. We also manufacture certain components such as weldments and precision machined components for use in fluid delivery systems for direct sales to our customers. This vertically integrated portion of our business is primarily focused on metal and plastic parts that are used in gas and chemical systems, respectively.

Fluid delivery subsystems ensure accurate measurement and uniform delivery of specialty gases and chemicals at critical steps in the semiconductor manufacturing process. Any malfunction or material degradation in fluid delivery reduces yields and increases the likelihood of manufacturing defects in these processes. Historically, semiconductor OEMs internally designed and manufactured the fluid delivery subsystems used in their process tools. Currently, most OEMs outsource the design, engineering and manufacturing of their gas delivery subsystems to a few specialized suppliers, including us. Additionally, many OEMs are also increasingly outsourcing the design, engineering and manufacturing of their chemical delivery subsystems due to the increased fluid expertise required to manufacture these subsystems. Outsourcing these subsystems has allowed OEMs to leverage the suppliers' highly specialized engineering, design and production skills while focusing their internal resources on their own value-added processes. We believe that this outsourcing trend has enabled OEMs to reduce their fixed costs and development time, as well as provided significant growth opportunities for specialized subsystems suppliers like us.

We have a global footprint with production facilities in Malaysia, Singapore, Korea, California, Florida, Minnesota, Oregon, and Texas. In 2018, 2017, and 2016, our two largest customers by revenue were Lam Research and Applied Materials.

The following summarizes key financial information for the periods indicated:

	Year Ended		
	December 28, 2018	December 29, 2017	December 30, 2016
Net sales	$ 823,611	$ 655,892	$ 405,747
Gross profit	$ 136,137	$ 100,761	$ 65,395
Gross margin	16.5%	15.4%	16.1%
Operating expenses	$ 72,172	$ 54,581	$ 41,524
Operating income	$ 63,965	$ 46,180	$ 23,871
Net income from continuing operations, GAAP	$ 57,883	$ 56,915	$ 20,779
Net income from continuing operations, Non-GAAP	$ 75,052	$ 65,060	$ 31,596

We increased operating income by $17.8 million, or 38.5%, in 2018, contemporaneous with a 25.6% increase in revenue, as we maintained leverage over our operating expenses and exercised strong cost control. Operating income was also impacted beneficially by our acquisitions of Talon and Cal-Weld in the second half of 2017, partially offset by amortization expense resulting from intangible assets recorded when we acquired Talon and Cal-Weld.

Net income from continuing operations, on a GAAP basis, increased $1.0 million. Included in net income from continuing operations are (1) discrete tax benefits recognized in 2017 related to acquisitions, re-characterizing intercompany debt to equity, and the impact of the 2017 Tax Cuts and Jobs Act that did not repeat in 2018; and (2) $6.7 million in increased interest expense in 2018 as a result of increased borrowings relating to our acquisitions in the second half of 2017.

Net income from continuing operations on a Non-GAAP basis, which excludes the impact of the aforementioned discrete tax benefits as well as share-based compensation expense, amortization expense, and other non-recurring items, rose by $10.0 million, or 15.4%, in 2018. See "Non-GAAP Results" for a discussion of adjusted net income from continuing operations, an accompanying presentation of the most directly comparable financial measure calculated in accordance with generally accepted accounting principles in the United States, net income from continuing operations, and a reconciliation of the differences between adjusted net income from continuing operations and net income from continuing operations.

Key Factors Affecting Our Business

Investment in Semiconductor Manufacturing Equipment

The design and manufacturing of semiconductor devices is constantly evolving and becoming more complex in order to achieve greater performance and efficiency. To keep pace with these changes, OEMs need to refine their existing products and invest in developing new products. In addition, semiconductor device manufacturers will continue to invest in new wafer fabrication equipment to expand their production capacity and to support new manufacturing processes.

Outsourcing of Subsystems by Semiconductor OEMs

Faced with increasing manufacturing complexities, more complex subsystems, shorter product lead times, shorter industry spend cycles, and significant capital requirements, outsourcing of subsystems and components by OEMs has continued to grow. In the past two decades, OEMs have outsourced most of their gas delivery systems to suppliers such as us. OEMs have also started to outsource their chemical delivery systems in recent years. Our results will be affected by the degree to which outsourcing of these fluid delivery systems by OEMs continues to grow.

Cyclicality of Semiconductor Device Industry

Our business is indirectly subject to the cyclicality of the semiconductor device industry. In 2018, we derived approximately 98% of our sales from the semiconductor device industry. Demand for semiconductor devices can fluctuate significantly based on changes in general economic conditions, including consumer spending, demand for the products that include these devices and other factors. These fluctuations have in the past resulted in significant variations in our results of operations. The cyclicality of the semiconductor device industries will continue to impact our results of operations in the future.

Customer Concentration

The number of capital equipment manufacturers for the semiconductor device industry is significantly consolidated, resulting in a small number of large manufacturers. Our customers are a significant component of this consolidation, resulting in our sales being concentrated in a few customers. In 2018, our top three customers were Lam Research, Applied Material, and ASML, with Lam Research and Applied Materials accounting for approximately 56% and 32% of sales, respectively. The sales we generated from these customers in 2018 were spread across 35 different product lines utilized in 13 unique manufacturing process steps. We believe the diversity of products that we provide to these customers, combined with the fact that our customers use our products on numerous types of process equipment, lessens the impact of the inherent concentration in the industry. Our customers often require reduced prices or other pricing, quality or delivery commitments as a condition to their purchasing from us in any given period or increasing their purchase volume, which can, among other things, result in reduced gross margins in order to maintain or expand our market share. Although we do not have any long-term contracts that require customers to place orders with us, Lam Research and Applied Materials have been our customers for over 10 years.

Acquisitions

We acquired Cal-Weld, a California-based leader in the design and fabrication of precision, high purity industrial components, subsystems, and systems, in July 2017 for $56.2 million. We also acquired Talon, a Minnesota-based leader in the design and manufacturing of high precision machined parts used in leading edge semiconductor tools, in December 2017 for $137.8 million. On a combined basis, these acquisitions contributed approximately $57.5 million to sales in 2017. We acquired IAN, a Seoul-based leader in providing locally-sourced design and manufacturing of gas delivery systems to customers in South Korea, for $6.5 million, which contributed $7.7 million to sales in 2018. These acquisitions continue to have a significant impact on our financial position and results of operations. We intend to continue to evaluate opportunistic acquisitions to supplement our organic growth, and any such acquisitions could have a material impact on our business and results of operations.

Components of Our Results of Operations

The following discussion sets forth certain components of our statements of operations as well as significant factors that impact those items.

Sales

We generate sales primarily from the design, manufacture, and sale of subsystems and components for semiconductor capital equipment. Sales are recognized when control of promised goods or services is transferred to our customers, in an amount that reflects the consideration we expect to be entitled to in exchange for those goods or services. Our shipping terms are generally "shipping point." Accordingly, control transfers, and sales are recognized, at this point-in-time.

Cost of Sales and Gross Profit

Cost of sales consists primarily of purchased materials, direct labor, indirect labor, factory overhead cost and depreciation expense for our manufacturing facilities and equipment, as well as certain engineering costs that are related to non-recurring engineering services that we provide to, and for which we invoice, our customers in connection with their product development activities. Our business has a highly variable cost structure with a low fixed overhead structure as a percentage of cost of sales. In addition, our existing global manufacturing plant capacity is scalable and we are able to adjust to increased customer demand for our products without significant additional capital investment. We operate our business in this manner in order to avoid having excessive fixed costs during a cyclical downturn while retaining flexibility to expand our production volumes during periods of growth. However, this approach results in a smaller increase in gross margin as a percentage of sales in times of increased demand.

Since the gross margin on each of our products differs, our overall gross margin as a percentage of our sales changes based on the mix of products we sell in any period.

Operating Expenses

Our operating expenses primarily include research and development and sales, general and administrative expenses. Personnel costs are the most significant component of operating expenses and consist of salaries, benefits, bonuses, share-based compensation and, with regard to sales and marketing expense, sales commissions. Operating expenses also include overhead costs for facilities, IT and depreciation. In addition, our operating expenses include costs related to amortization of intangible assets and restructuring costs.

Research and development – Research and development expense consists primarily of activities related to product design and other development activities, new component testing and evaluation, and test equipment and fixture development. Research and development expense does not include engineering costs that are related to non-recurring engineering services that we provide to and for which we invoice our customers as part of sales, which are reflected as cost of sales. We expect research and development expense will increase in absolute dollars as our customers continue to increase their demand for new product designs and as we invest in our research and product development efforts to enhance our product capabilities and access new customer markets.

Selling, general and administrative – Selling expense consists primarily of salaries and commissions paid to our sales and sales support employees and other costs related to the sales of our products. General and administrative expense consists primarily of salaries and overhead associated with our administrative staff, professional fees and depreciation and other allocated facility related costs. We expect selling expenses to increase in absolute dollars as we continue to invest in expanding our markets and as we expand our international operations. We expect general and administrative expenses to also increase in absolute dollars due to an increase in costs related to being a public company, including higher legal, corporate insurance and accounting expenses.

Amortization of intangibles – Amortization of intangible assets is related to our finite-lived intangible assets and is computed using the straight-line method over the estimated economic life of the asset.

Interest Expense, net

Interest expense, net consists of interest on our outstanding debt under our Credit Facilities and any other indebtedness we may incur in the future.

Other Income, Net

The functional currency of our international subsidiaries located in the United Kingdom, Singapore and Malaysia is the U.S. dollar. Transactions denominated in currencies other than the functional currency generate foreign exchange gains and losses that are included in other expense, net on the accompanying consolidated statements of operations. Substantially all of our sales and agreements with third party suppliers provide for pricing and payments in U.S. dollars and, therefore, are not subject to material exchange rate fluctuations.

Income Tax Benefit

During 2018, income tax benefit from continuing operations consists primarily of the impact of U.S. operations, offset by discrete tax benefits, including the release of a valuation allowance against our foreign tax credit carryforwards we now expect to realize as a result of additional analysis of the Tax Cuts and Jobs Act and stock option exercises. During 2017, income tax benefit from continuing operations consists primarily of the impact of foreign operations, including withholding taxes, offset by a $7.6 million tax benefit as a result of our acquisitions (see *Note 2 – Acquisitions* of our consolidated financial statements included elsewhere in this report), a $5.9 million tax benefit from revaluing our deferred taxes from 35% to 21% due to the Tax Cuts and Jobs Act, and a $1.6 million benefit from re-characterizing intercompany debt to equity between our U.S. and Singapore entities related to the reversal of previously accrued withholding taxes. During 2016 and 2015, income tax benefit from continuing operations consisted primarily of the impact of foreign operations, including withholding taxes, offset by a tax benefit in 2016 as a result of our acquisition.

Results of Operations

The following table sets forth our results of operations for the periods presented. The period-to-period comparison of results is not necessarily indicative of results for future periods.

	Year Ended		
	December 28, 2018	December 29, 2017	December 30, 2016
		(in thousands)	
Consolidated Statements of Operations Data:			
Sales	$ 823,611	$ 655,892	$ 405,747
Cost of sales	687,474	555,131	340,352
Gross profit	136,137	100,761	65,395
Operating expenses:			
Research and development	9,355	7,899	6,383
Selling, general, and administrative	47,448	37,802	28,126
Amortization of intangible assets	15,369	8,880	7,015
Total operating expenses	72,172	54,581	41,524
Operating income	63,965	46,180	23,871
Interest expense	9,987	3,277	4,370
Other income, net	(241)	(126)	(629)
Income from continuing operations before income taxes	54,219	43,029	20,130
Income tax benefit from continuing operations	(3,664)	(13,886)	(649)
Net income from continuing operations	57,883	56,915	20,779
Discontinued operations:			
Loss from discontinued operations before taxes	—	(722)	(4,077)
Income tax expense from discontinued operations	—	(261)	40
Net loss from discontinued operations	—	(461)	(4,117)
Net income	$ 57,883	$ 56,454	$ 16,662

The following table sets forth our results of operations as a percentage of our total sales for the periods presented.

	Year Ended		
	December 28, 2018	December 29, 2017	December 30, 2016
Consolidated Statements of Operations Data:			
Sales	100.0	100.0	100.0
Cost of sales	83.5	84.6	83.9
Gross profit	16.5	15.4	16.1
Operating expenses:			
Research and development	1.1	1.2	1.6
Selling, general, and administrative	5.8	5.8	6.9
Amortization of intangible assets	1.9	1.4	1.7
Total operating expenses	8.8	8.3	10.2
Operating income	7.8	7.0	5.9
Interest expense	1.2	0.5	1.1
Other income, net	0.0	0.0	(0.2)
Income from continuing operations before income taxes	6.6	6.6	5.0
Income tax benefit from continuing operations	(0.4)	(2.1)	(0.2)
Net income from continuing operations	7.0	8.7	5.1
Discontinued operations:			
Loss from discontinued operations before taxes	0.0	(0.1)	(1.0)
Income tax expense from discontinued operations	0.0	0.0	0.0
Net loss from discontinued operations	0.0	(0.1)	(1.0)
Net income	7.0	8.6	4.1

Comparison of Fiscal Years 2018 and 2017

Sales

	Year Ended		Change	
	December 28, 2018	December 29, 2017	Amount	%
	(dollars in thousands)			
Net sales	$ 823,611	$ 655,892	$ 167,719	25.6%

The increase in net sales from 2017 to 2018 was primarily related to an increase in volume resulting from industry growth, our acquisitions of Cal-Weld, Talon, and IAN, and market share gains. We refer to the volume of purchases from us by a customer of ours relative to its other suppliers as our market share of that customer. On a geographic basis, sales in the U.S. increased by $116.1 million to $502.8 million, and foreign sales increased by $51.6 million to $320.9 million.

Cost of Sales and Gross Margin

	Year Ended		Change	
	December 28, 2018	December 29, 2017	Amount	%
	(dollars in thousands)			
Cost of sales	$ 687,474	$ 555,131	$ 132,343	23.8%
Gross profit	$ 136,137	$ 100,761	$ 35,376	35.1%
Gross margin	16.5%	15.4%		+110 bps

The increase in cost of sales and gross profit from 2017 to 2018 was primarily due to increased sales volume and our acquisitions of Cal-Weld and Talon in the third and fourth quarters of 2017, respectively.

The 110 basis point increase in our gross margin was primarily due to the accretive impact of our acquisitions of Cal-Weld and Talon. The increase was due to the following: (1) 70 basis points from sales accretive to gross margin, primarily from our acquisitions of Cal-Weld and Talon; (2) 20 basis points from a charge to cost of sales of $4.8 million (0.6% of revenue) and $5.2 million (0.8% of revenue) in 2018 and 2017, respectively, due to recording acquired inventory at fair value; and (3) 20 basis points from a $1.8 million charge to cost of sales in the second quarter of 2017 from an error correction relating to translated inventory balances at our Malaysia and Singapore subsidiaries using an incorrect foreign currency rate.

Research and Development

	Year Ended		Change	
	December 28, 2018	December 29, 2017	Amount	%
	(dollars in thousands)			
Research and development	$ 9,355	$ 7,899	$ 1,456	18.4%

The increase in research and development expenses from 2017 to 2018 was primarily due to incremental expenses from our acquisition of Talon, increased share-based compensation expense, and an increase in headcount and other program expenses to support additional new product developments.

Selling, General and Administrative

	Year Ended		Change	
	December 28, 2018	December 29, 2017	Amount	%
	(dollars in thousands)			
Selling, general, and administrative	$ 47,448	$ 37,802	$ 9,646	25.5%

The increase in selling, general, and administrative expense from 2017 to 2018 was primarily due to $8.6 million in incremental operating expenses from our acquisitions of Cal-Weld, Talon, and IAN, a $4.5 million increase in share-based compensation expense (inclusive of $2.9 million associated with modifying our former CFO's equity awards), $1.1 million in non-equity separation benefits for former CFO, and $1.1 million in various costs to support growth, partially offset by a $2.2 million decrease in acquisition-related expenses, a $1.3 million credit from derecognizing our IAN earn-out liability, a $1.0 million charge in the third quarter of 2017 from a final arbitration ruling on our working capital claim with the sellers of Ajax, and $1.0 million in expense incurred in 2017 associated with the secondary offerings of our shares by affiliates of our former principal shareholder, FP.

Amortization of Intangible Assets

	Year Ended		Change	
	December 28, 2018	December 29, 2017	Amount	%
	(dollars in thousands)			
Amortization of intangibles assets	$ 15,369	$ 8,880	$ 6,489	73.1%

The increase in amortization expense from 2017 to 2018 was due to incremental amortization expense from intangible assets acquired in connection with our acquisitions of Cal-Weld and Talon in the second half of 2017 and IAN in the second quarter of 2018. The fair value assigned to intangible assets acquired in connection with our acquisition IAN is still preliminary.

Interest Expense, Net

	Year Ended		Change	
	December 28, 2018	December 29, 2017	Amount	%
	(dollars in thousands)			
Interest expense	$ 9,987	$ 3,277	$ 6,710	204.8%

The increase in interest expense from 2017 to 2018 was primarily due to an increase in the average amount borrowed, which was primarily due to our acquisition of Talon in December 2017, resulting in an additional $120.0 million borrowed. Our average amount borrowed in 2018 was $196.6 million compared to $58.9 million in 2017. Our weighted average interest rate was 4.36% in 2018 compared to 4.30% in 2017.

Other Income, Net

	Year Ended		Change	
	December 28, 2018	December 29, 2017	Amount	%
	(dollars in thousands)			
Other income, net	$ (241)	$ (126)	$ (115)	91.3%

The change in other income, net for 2018 was primarily due to exchange rate fluctuations on transactions denominated in the local currencies of our foreign operations, principally the Singapore Dollar, Malaysian Ringgit, and British Pound, and a gain of $0.2 million on the sale of our cost method investment, CHawk Technology International, Inc. ("CHawk") in the first quarter of 2017 that did not repeat in the first quarter of 2018.

Income Tax Benefit from Continuing Operations

	Year Ended		Change	
	December 28, 2018	December 29, 2017	Amount	%
	(dollars in thousands)			
Income tax benefit from continuing operations	$ (3,664)	$ (13,886)	$ 10,222	-73.6%

The decrease in income tax benefit from 2017 to 2018 was primarily due to $12.7 million in discrete tax benefits recognized in 2017 relating to the reversal of previously accrued withholding taxes from our re-characterization of intercompany debt to equity, our acquisitions of Talon and Cal-Weld, and the impact of the Tax Cuts and Jobs Act that did not repeat in 2018, a $4.2 million decrease in excess tax benefits from share-based compensation from 2017 to 2018, and a $2.4 million decrease in permanently disallowed expenses in 2018, partially offset by a $4.1 million tax benefit recognized due to the release of a valuation allowance against foreign tax credit carryforwards in the second quarter of 2018.

Comparison of Fiscal Years 2017 and 2016

Sales

	Year Ended		Change	
	December 29, 2017	December 30, 2016	Amount	%
	(dollars in thousands)			
Net sales	$ 655,892	$ 405,747	$ 250,145	61.7%

The increase in sales from 2016 to 2017 was primarily related to an increase in volume resulting from industry growth, our acquisitions of Cal-Weld and Talon, and market share gains. The volume increase was due to an approximate 6.1%, or approximately $77.8 million, increase in our market share at our two largest customers, which includes the acquisitions of Cal-Weld and Talon, and an approximately $172.3 million increase in the volume of purchases primarily by our two largest customers driven by overall industry growth. We refer to the volume of purchases from us by a customer of ours relative to its other suppliers as our market share of that customer. On a geographic basis, sales in the U.S. increased by $143.4 million in 2017 to $386.6 million. Foreign sales increased by $80.2 million in 2017 to $269.3 million.

Cost of Sales and Gross Margin

	Year Ended		Change	
	December 29, 2017	December 30, 2016	Amount	%
	(dollars in thousands)			
Cost of sales	$ 555,131	$ 340,352	$ 214,779	63.1%
Gross profit	$ 100,761	$ 65,395	$ 35,366	54.1%
Gross margin	15.4%	16.1%		- 70 bps

The increase in cost of sales from 2016 to 2017 was primarily due to the increase in sales volume. The increase in absolute dollars of gross profit was driven primarily by an increase in sales volume.

As part of our purchase of Talon and Cal-Weld, we recorded opening inventory at fair value which included a fair value adjustment to inventory of $6.2 million and $3.6 million, respectively. We released a combined $5.2 million of the fair value adjustment to cost of sales based on the sale of inventory during 2017. The impact of this charge accounts for a decrease to reported gross margin of 80 basis points for 2017.

As discussed in *Note 1 – Basis of Presentation* to the consolidated financial statements, we recorded a charge to cost of sales of $1.8 million in the second quarter of 2017 due to the correction of an error related to translating inventory balances at our Singapore and Malaysia subsidiaries. The impact of this charge accounts for a decrease to reported gross margin of 30 basis points in 2017.

Additionally, our gross margins for 2017 were favorably impacted by our acquisitions of Cal-Weld and Talon, with margins that were accretive to our historical business.

Research and Development

	Year Ended		Change	
	December 29, 2017	December 30, 2016	Amount	%
	(dollars in thousands)			
Research and development	$ 7,899	$ 6,383	$ 1,516	23.8%

The increase in research and development expenses from 2016 to 2017 was due to an increase in headcount and consulting expense to support additional projects and development programs.

Selling, General and Administrative

	Year Ended		Change	
	December 29, 2017	December 30, 2016	Amount	%
	(dollars in thousands)			
Selling, general and administrative	$ 37,802	$ 28,126	$ 9,676	34.4%

The increase in selling, general, and administrative expense from 2016 to 2017 was primarily due to increased acquisition-related expenses from our acquisitions of Cal-Weld and Talon, incremental Cal-Weld and Talon operating expenses incurred subsequent to the acquisition, increased expenses resulting from the secondary offerings of our ordinary shares by FP, increased public company costs, increased incentive compensation on improved performance to operating targets, and increased headcount expense to support increased sales volume.

Selling, general, and administrative expense also increased during 2017 due to a charge of approximately $1.0 million as a result of the final arbitration ruling on our working capital claim with the sellers of Ajax. The ruling was outside of the one year measurement period and not considered to be an adjustment to goodwill, resulting in a charge to selling, general, and administrative expense.

Amortization of Intangible Assets

	Year Ended		Change	
	December 29, 2017	December 30, 2016	Amount	%
	(dollars in thousands)			
Amortization of intangibles assets	$ 8,880	$ 7,015	$ 1,865	26.6%

The increase in amortization expense from 2016 to 2017 was due to incremental amortization expense from intangible assets acquired in connection with our acquisition of Ajax in the second quarter of 2016, and our acquisitions of Talon and Cal-Weld in the second half of 2017.

Interest Expense, Net

	Year Ended		Change	
	December 29, 2017	December 30, 2016	Amount	%
	(dollars in thousands)			
Interest expense	$ 3,277	$ 4,370	$ (1,093)	-25.0%

The decrease in interest expense, net from 2016 to 2017 was due to a decrease in the average amount borrowed during 2017 as a result of the pay down of debt in December 2016 using proceeds from our IPO and a 70 basis point decrease in our average interest rate during 2017 primarily from an amendment to our Credit Facilities in connection with our acquisition of Cal-Weld, partially offset by an additional $30.0 million in borrowings to fund our acquisition of Cal-Weld. The additional $120.0 million in borrowings to fund our acquisition of Talon and the related impact on our average interest rate was not significant to 2017 results due to the short period of time the additional borrowing were outstanding during 2017.

Total borrowings outstanding at December 29, 2017, net of debt issuance costs, was $186.7 million, compared to $37.9 million at December 30, 2016.

Other Income, Net

	Year Ended		Change	
	December 29, 2017	December 30, 2016	Amount	%
	(dollars in thousands)			
Other income, net	$ (126)	$ (629)	$ 503	-80.0%

The decrease in other income, net from 2016 to 2017 was primarily due to exchange rate fluctuations on transactions denominated in the local currencies of our foreign operations, principally the Singapore Dollar, Malaysian Ringgit, and British Pound, partially offset by a gain on the sale of our cost method investment, CHawk Technology International, Inc. ("CHawk") of $0.2 million that occurred in the first quarter of 2017.

Income Tax Benefit from Continuing Operations

	Year Ended		Change	
	December 29, 2017	December 30, 2016	Amount	%
	(dollars in thousands)			
Income tax benefit from continuing operations	$ (13,886)	$ (649)	$ (13,237)	n/m

During 2017, income tax benefit from continuing operations consists primarily of the impact of foreign operations, including withholding taxes, offset by a $7.6 million tax benefit as a result of our acquisitions of Talon and Cal-Weld, a $5.9 million tax benefit from revaluing our deferred taxes from 35% to 21% due to the Tax Cuts and Jobs Act, and a $1.6 million benefit from re-characterizing intercompany debt to equity between our U.S. and Singapore entities related to the reversal of previously accrued withholding taxes. This compares to a discrete tax benefit of only $2.3 million in 2016 in connection with our acquisition of Ajax.

Non-GAAP Results

Management uses non-GAAP adjusted net income from continuing operations to evaluate our operating and financial results. We believe the presentation of non-GAAP results is useful to investors for analyzing business trends and comparing performance to prior periods, along with enhancing investors' ability to view our results from management's perspective. Non-GAAP adjusted net income from continuing operations is defined as: net income from continuing operations excluding (1) amortization of intangible assets, share-based compensation expense, non-recurring expenses including adjustments to the cost of goods sold, and the tax adjustments related to those non-GAAP adjustments; and (2) non-recurring discrete tax items including tax impacts from releasing a valuation allowance related to foreign tax credits to the extent they are present in gross profit, operating income, and net income from continuing operations. Non-GAAP adjusted diluted EPS is defined as non-GAAP adjusted net income from continuing operations divided by weighted average diluted ordinary shares outstanding during the period.

The following table presents our unaudited non-GAAP adjusted net income from continuing operations and a reconciliation from net income from continuing operations, the most comparable GAAP measure, for the periods indicated:

	Year Ended		
	December 28, 2018	December 29, 2017	December 30, 2016
	(dollars in thousands, except per share amounts)		
Non-GAAP Data:			
Net income from continuing operations	$ 57,883	$ 56,915	$ 20,779
Non-GAAP adjustments:			
Amortization of intangible assets	15,369	8,880	7,015
Share-based compensation (1)	7,577	2,230	3,216
Other non-recurring expense, net (2)	1,727	4,767	2,988
Tax adjustments related to non-GAAP adjustments	(8,203)	(626)	(131)
Tax benefit from acquisitions (3)	—	(7,582)	(2,271)
Tax benefit from re-characterizing intercompany debt to equity (4)	—	(1,627)	—
Tax impact from tax law change (5)	—	(5,911)	—
Tax benefit from release of valuation allowance (6)	(4,140)	—	—
Adjustments to cost of goods sold (7)	—	1,752	—
Fair value adjustment to inventory from acquisitions (8)	4,839	5,230	—
Loss on Ajax acquisition arbitration settlement (9)	—	1,032	—
Non-GAAP adjusted net income from continuing operations	$ 75,052	$ 65,060	$ 31,596
Non-GAAP adjusted diluted EPS	$ 2.99	$ 2.48	$ 1.31
Shares used to compute diluted EPS	25,128,055	26,218,424	24,188,881

(1) Included in share-based compensation for 2018 is $2.9 million from accelerating the vesting of our former CFO's equity awards pursuant to separation benefits that became effective in January 2018.

(2) Included in this amount for fiscal year 2018 are (i) expenses associated with separation benefits for our former CFO that became effective in January 2018, (ii) a gain on the extinguishment of an earn-out liability recorded in connection with our acquisition of IAN in April 2018 which will not be paid, and (iii) acquisition-related expenses, comprised primarily of expense associated with a two year retention agreement between key management personnel of IAN.

Included in this amount for 2017 are (i) acquisition-related expenses, (ii) expenses incurred in connection with sales or other dispositions of our ordinary shares by affiliates of FP, (iii) executive search expenses incurred in connection with replacing the Company's Chief Financial Officer, (iv) a refund of previously paid consulting fees from FP Consulting ("FPC"), and (v) a gain on sale of our investment in CHawk.

Included in this amount for 2016 are (i) acquisition-related expenses, (ii) bonuses paid to members of our management in connection with the cash dividend paid by us in August 2015, (iii) consulting fees paid to FPC, and (iv) IPO preparation expenses.

(3) We recorded $2.3 million in tax benefit in the fourth quarter of 2017 and $5.3 million in the third quarter of 2017 in connection with our acquisitions of Talon and Cal-Weld, respectively. We recorded $2.3 million in tax benefits in the second quarter of 2016 in connection with its acquisition of Ajax.

(4) In the third quarter of 2017, we re-characterized intercompany debt to equity between our U.S. and Singapore entities resulting in a tax benefit of $1.6 million related to the reversal of previously accrued withholding taxes.

(5) This adjustment represents the impact of U.S. corporate tax reform.

(6) Represents the release of a valuation allowance against our foreign tax credit carryforwards we now expect to realize as a result of additional analysis of the Tax Cuts and Jobs Act.

(7) During the second quarter of 2017, we corrected an error relating to translated inventory balances at our Malaysia and Singapore subsidiaries using an incorrect foreign currency rate. The error arose in prior period financial statements beginning in periods prior to 2014 and through 2016. The correction resulted in a $1.8 million increase in cost of sales and a corresponding decrease in gross profit in our consolidated statement of operations and a decrease to inventories in our consolidated balance sheet during the second quarter of 2017.

(8) As part of our purchase price allocations for our acquisitions of Cal-Weld in July 2017 and Talon in December 2017 and our preliminary purchase price allocation for our acquisition of IAN in April 2018, we recorded acquired-inventory at fair value, resulting in a fair value step-up of $3.6 million, $6.2 million, and $0.3 million, respectively. These amounts were subsequently released to cost of sales as acquired-inventory was sold.

(9) During the third quarter of 2017, we received a final arbitration ruling on our working capital claim with the sellers of Ajax. The ruling was outside the one year measurement period and therefore could not be considered an adjustment to goodwill, resulting in a charge to selling, general, and administrative expense.

Non-GAAP adjusted net income from continuing operations has limitations as an analytical tool, and you should not consider it in isolation or as a substitute for net income or any of our other operating results reported under GAAP. Other companies may calculate adjusted net income differently or may use other measures to evaluate their performance, both of which could reduce the usefulness of our adjusted net income as a tool for comparison.

Because of these limitations, you should consider non-GAAP adjusted net income from continuing operations alongside other financial performance measures, including net income from continuing operations and other financial results presented in accordance with GAAP. In addition, in evaluating non-GAAP adjusted net income, you should be aware that in the future we will incur expenses such as those that are the subject of adjustments in deriving adjusted net income and you should not infer from our presentation of adjusted net income that our future results will not be affected by these expenses or any unusual or non-recurring items.

Unaudited Quarterly Financial Results

The following table set forth statement of operations data for the periods indicated. The information for each of these periods is unaudited and has been prepared on the same basis as our audited consolidated financial statements included herein and includes all adjustments, consisting only of normal recurring adjustments that we consider necessary for a fair presentation of our unaudited operations data for the periods presented. Historical results are not necessarily indicative of the results to be expected in the future.

	Three Months Ended							
	December 28, 2018	September 28, 2018	June 29, 2018	March 30, 2018	December 29, 2017	September 29, 2017	June 30, 2017	March 31, 2017
	(in thousands, except share and per share amounts)							
Sales	$ 141,402	$ 175,207	$ 248,973	$ 258,029	$ 182,936	$ 164,519	$ 159,733	$ 148,704
Cost of sales	119,953	146,993	205,098	215,430	153,892	140,323	136,227	124,689
Gross profit	21,449	28,214	43,875	42,599	29,044	24,196	23,506	24,015
Operating expenses:								
Research and development	2,203	2,123	2,577	2,452	2,213	1,992	1,950	1,744
Selling, general and administrative	9,432	10,658	11,647	15,711	11,530	11,430	7,984	6,858
Amortization of intangible assets	3,833	3,885	3,772	3,879	3,062	2,220	1,803	1,795
Total operating expenses	15,468	16,666	17,996	22,042	16,805	15,642	11,737	10,397
Operating income	5,981	11,548	25,879	20,557	12,239	8,554	11,769	13,618
Interest expense	2,627	2,553	2,303	2,504	1,173	739	675	690
Other expense (income), net	(181)	(84)	(217)	241	199	73	151	(549)
Income from continuing operations before income taxes	3,535	9,079	23,793	17,812	10,867	7,742	10,943	13,477
Income tax expense (benefit) from continuing operations	50	(558)	(4,247)	1,091	(8,328)	(6,556)	473	525
Net income from continuing operations	3,485	9,637	28,040	16,721	19,195	14,298	10,470	12,952
Discontinued operations:								
Loss from discontinued operations before taxes	—	—	—	—	(1)	—	(610)	(111)
Income tax expense (benefit) from discontinued operations	—	—	—	—	(270)	8	—	1
Net income (loss) from discontinued operations	—	—	—	—	269	(8)	(610)	(112)
Net income	3,485	9,637	28,040	16,721	19,464	14,290	9,860	12,840
Diluted net income per share from continuing operations:	$ 0.15	$ 0.39	$ 1.07	$ 0.63	$ 0.72	$ 0.54	$ 0.40	$ 0.51
Diluted net income per share:	$ 0.15	$ 0.39	$ 1.07	$ 0.63	$ 0.73	$ 0.54	$ 0.38	$ 0.50
Shares used to compute diluted net income per share:	23,014,317	24,674,912	26,120,717	26,734,710	26,656,065	26,278,147	26,063,527	25,640,089

The following table sets forth our unaudited quarterly consolidated statement of operations data as a percentage of sales for the periods indicated.

	Three Months Ended							
	December 28, 2018	September 28, 2018	June 29, 2018	March 30, 2018	December 29, 2017	September 29, 2017	June 30, 2017	March 31, 2017
Sales	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Cost of sales	84.8	83.9	82.4	83.5	84.1	85.3	85.3	83.9
Gross profit	15.2	16.1	17.6	16.5	15.9	14.7	14.7	16.1
Operating expenses:								
Research and development	1.6	1.2	1.0	1.0	1.2	1.2	1.2	1.2
Selling, general and administrative	6.7	6.1	4.7	6.1	6.3	6.9	5.0	4.6
Amortization of intangible assets	2.7	2.2	1.5	1.5	1.7	1.3	1.1	1.2
Total operating expenses	10.9	9.5	7.2	8.5	9.2	9.5	7.3	7.0
Operating income	4.2	6.6	10.4	8.0	6.7	5.2	7.4	9.2
Interest expense	1.9	1.5	0.9	1.0	0.6	0.4	0.4	0.5
Other expense (income), net	(0.1)	0.0	(0.1)	0.1	0.1	0.0	0.1	(0.4)
Income from continuing operations before income taxes	2.5	5.2	9.6	6.9	5.9	4.7	6.9	9.1
Income tax expense (benefit) from continuing operations	0.0	(0.3)	(1.7)	0.4	(4.6)	(4.0)	0.3	0.4
Net income from continuing operations	2.5	5.5	11.3	6.5	10.5	8.7	6.6	8.7
Discontinued operations:								
Loss from discontinued operations before taxes	0.0	0.0	0.0	0.0	0.0	0.0	(0.4)	(0.1)
Income tax expense (benefit) from discontinued operations	0.0	0.0	0.0	0.0	(0.1)	0.0	0.0	0.0
Net income (loss) from discontinued operations	0.0	0.0	0.0	0.0	0.1	0.0	(0.4)	(0.1)
Net income	2.5	5.5	11.3	6.5	10.6	8.7	6.2	8.6

Seasonality

We have not historically experienced meaningful seasonality with respect to our business or results of operations.

Liquidity and Capital Resources

We had cash of $43.8 million as of December 28, 2018, compared to $69.3 million as of December 29, 2017. Our principal uses of liquidity are to fund our working capital needs, purchase new capital equipment, and our share repurchase program. The decrease was primarily due to cash flow from operations of $60.5 million, net borrowings on long-term debt of $15.3 million, and proceeds from the issuance of ordinary shares under our share-based compensation plans of $6.2 million, offset by share repurchases of $90.0 million, capital expenditures of $13.9 million, debt modification costs from the refinancing of our credit facilities in February 2018 of $2.1 million, and net cash paid in connection with acquisitions of $1.4 million.

We believe that our cash, the amounts available under our revolving credit facility, and our cash flows from operations will be sufficient to meet our anticipated cash needs for at least the next 12 months.

Cash Flow Analysis

The following table sets forth a summary of operating, investing, and financing activities for the periods presented:

	Year Ended		
	December 28, 2018	December 29, 2017	December 30, 2016
	(in thousands)		
Cash provided by operating activities	$ 60,475	$ 38,803	$ 27,730
Cash used in investing activities	(15,363)	(186,751)	(21,202)
Cash provided by (used in) financing activities	(70,582)	164,604	21,932
Net increase (decrease) in cash	$ (25,470)	$ 16,656	$ 28,460

Operating Activities

We generated $60.5 million from operating activities during 2018 due to net income of $57.9 million and net non-cash charges of $24.9 million, partially offset by an increase in our net operating assets and liabilities of $22.3 million, net of acquired assets and liabilities. Non-cash charges primarily consist of depreciation and amortization of $23.1 million and share-based compensation of $7.6 million, partially offset by deferred income taxes of $6.7 million. The increase in our net operating assets and liabilities was primarily due to a decrease in accounts payable and accrued and other liabilities of $62.2 million and $5.0 million, respectively, partially offset by a decrease in inventories and accounts receivable of $35.1 million and $10.4 million, respectively.

We generated $38.8 million of cash from operating activities during 2017 due to net income of $56.5 million, partially offset by net non-cash charges of $(0.2) million and an increase in our net operating assets and liabilities of $17.4 million. Non-cash charges primarily related to $12.5 million in depreciation and amortization, $2.2 million in share-based compensation, and $0.6 million in amortization of debt issuance cost, offset by $15.3 million in deferred tax benefit and a gain on the sale of our investment in CHawk of $0.2 million. The increase in net operating assets and liabilities was primarily due to an increase in inventories of $43.4 million in order to meet sales demand in the first quarter of 2018, partially offset by an increase in accounts payable of $22.6 million and prepaid expenses and other assets of $3.4 million.

We generated $27.7 million of cash from operating activities during 2016 due to net income of $16.7 million, non-cash charges of $10.8 million, and a net decrease of $0.2 million in our net operating assets and liabilities. Non-cash charges primarily related to $9.5 million in depreciation and amortization, $3.2 million in share-based compensation, and $0.5 million in amortization of debt issuance cost, offset in part by $2.4 million in deferred tax benefit. The decrease in net operating assets and liabilities was primarily due to an increase in accounts payable of $36.8 million resulting from increased materials purchased to support higher sales volumes. The decrease in our net operating assets and liabilities was partially offset by an increase of $9.0 million in accounts receivable due to increased sales and timing of customer payments, an increase in inventory of $23.7 million due to anticipated sales in the first quarter of 2017, and a decrease in customer deposits of $4.2 million arising from a reduction in customer orders associated with discontinued operations.

Investing Activities

Cash used in investing activities during 2018 was $15.4 million due to capital expenditures of $13.9 million and net cash paid in connection with acquisitions of $1.4 million.

Cash used in investing activities during 2017 was $186.8 million. We used approximately $131.4 million and $49.5 million, net of acquired cash, to acquire Talon and Cal-Weld, respectively, and $8.2 million to fund capital expenditures to purchase test fixtures and leasehold improvements primarily related to our plant expansions in the United States and Malaysia. These outflows were partially offset by proceeds from the sale of our investments in Ajax Foresight Global Manufacturing Sdn. Bhd. (“AFGM”) and CHawk and the settlement of a note receivable from AFGM of $2.4 million.

Cash used in investing activities during 2016 was $21.2 million. We used $17.4 million, net of cash acquired, to acquire Ajax and $4.3 million from capital expenditures to purchase test fixtures and leasehold improvements primarily related to our plant expansions in the United States and Malaysia, partially offset by proceeds from sales of certain intangible and fixed assets totaling $0.5 million.

Financing Activities

Cash used in financing activities during 2018 was $70.6 due to share repurchases of $90.0 million and debt modification costs in connection with the refinancing of our credit facilities in February 2018 of $2.1 million, partially offset by net borrowing on long-term debt of $15.3 million and proceeds related to issuances of ordinary shares under our share-based compensation plans of $6.2 million.

We generated $164.6 million of cash from financing activities during 2017, which primarily consisted of $150.0 million in proceeds from the issuance of long-term debt to fund our acquisitions of Talon and Cal-Weld, $9.1 million in proceeds from employees’ and directors’ exercise of stock options, and $7.3 million of proceeds from the exercise of the underwriters’ over-allotment option in January 2017 in connection with our December 2016 IPO, partially offset by $1.5 million in financing costs associated with the issuance of long-term debt.

We generated $21.9 million of cash from financing during 2016, which consisted of net proceeds from our IPO of $47.1 million and $27.0 million of proceeds from borrowings under our Credit Facilities, partially offset by $52.2 million used to partially repay amounts owed under our Credit Facilities.

Subsequent Events

Subsequent events are events or transactions that occur after the balance sheet date but before financial statements are issued. For a description of subsequent events, please review the information provided in *Note 16 – Subsequent Events* of our consolidated financial statements in Part IV, Item 15 of this report on Form 10-K.

Credit Facilities

For a description of our Credit Facilities, please review the information provided in *Note 9 – Credit Facilities* of our consolidated financial statements included in Part IV, Item 15 of this report.

Contractual Obligations and Commitments

The following summarizes our contractual obligations and commitments as of December 28, 2018:

	Payments Due by Period				
	Total	Less Than 1 Year	1-3 Years	3-5 Years	More Than 5 Years
			(in thousands)		
Operating leases	$ 19,182	$ 4,910	$ 9,229	$ 4,923	$ 120
Long-term debt obligations, principal (1)	204,787	8,750	17,500	178,537	—
Long-term debt obligations, interest (2)	34,657	9,000	16,860	8,797	—
Total	$ 258,626	$ 22,660	$ 43,589	$ 192,257	$ 120

(1) Represents the contractually required principal payments under our Credit Facilities in accordance with the required principal payment schedule.

(2) Represents the contractually required interest payments under our Credit Facilities in accordance with the required interest payment schedule. Interest costs have been estimated based on interest rates in effect for such indebtedness as of December 28, 2018.

Critical Accounting Policies and Estimates

Our consolidated financial statements have been prepared in accordance with U.S. generally accepted accounting principles. The preparation of these consolidated financial statements requires us to make estimates and assumptions that affect the reported amounts of assets, liabilities, sales, expenses, and related disclosures. We base our estimates on historical experience and on various other assumptions that we believe are reasonable under the circumstances. We evaluate our estimates and assumptions on an ongoing basis. Actual results may differ from these estimates. To the extent that there are material differences between these estimates and our actual results, our future financial statements will be affected.

The critical accounting policies requiring estimates, assumptions, and judgments that we believe have the most significant impact on our consolidated financial statements are described below.

Revenue Recognition

To understand our revenue recognition accounting policy, please review the information provided in *Note 1 – Organization and Summary of Significant Accounting*.

Inventory Valuation

To understand our inventory valuation accounting policy, please review the information provided in *Note 1 – Organization and Summary of Significant Accounting*. During 2018, 2017, and 2016, we wrote down $1.9 million, $0.9 million, and $3.9 million, respectively, in inventory determined to be excessive or obsolete.

Recent Accounting Pronouncements

From time to time, the Financial Accounting Standards Board ("FASB") or other standards setting bodies issue new accounting pronouncements. Updates to the FASB Accounting Standards Codification are communicated through issuance of an Accounting Standards Update ("ASU"). Unless otherwise discussed, we believe that the impact of recently issued guidance, whether adopted or to be adopted in the future, is not expected to have a material impact on our Consolidated Financial Statements upon adoption.

To understand the impact of recently issued guidance, whether adopted or to be adopted, please review the information provided in *Note 1 – Organization and Summary of Significant Accounting Policies* of our consolidated financial statements in Part IV, Item 15 of this report.

Off-Balance Sheet Arrangements

As of December 28, 2018, we did not have any relationships with unconsolidated entities or financial partnerships, such as structured finance or special purpose entities, which were established for the purpose of facilitating off-balance sheet arrangements or other purposes.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

We are exposed to financial market risks, including changes in currency exchange rates and interest rates.

Foreign Currency Exchange Risk

Currently, substantially all of our sales and arrangements with third-party suppliers provide for pricing and payment in U.S. dollars and, therefore, are not subject to material exchange rate fluctuations. As a result, we do not expect foreign currency exchange rate fluctuations to have a material effect on our results of operations. However, increases in the value of the U.S. dollar relative to other currencies would make our products more expensive relative to competing products priced in such other currencies, which could negatively impact our ability to compete. Conversely, decreases in the value of the U.S. dollar relative to other currencies could result in our foreign suppliers raising their prices in order to continue doing business with us.

While not currently significant, we do have certain operating expenses that are denominated in currencies of the countries in which our operations are located, and may be subject to fluctuations due to foreign currency exchange rates, particularly the Singapore dollar, Malaysian Ringgit, British Pound and Euro. Fluctuations in foreign currency exchange rates may cause us to recognize transaction gains and losses in our statement of operations. To date, foreign currency transaction gains and losses have not been material to our financial statements, and we have not engaged in any foreign currency hedging transactions.

Interest Rate Risk

We had total indebtedness of $204.8 million as of December 28, 2018, exclusive of $3.9 million in debt issuance costs, of which $8.8 million was due within 12 months. The outstanding amount of debt included elsewhere in this report is net of debt issuance costs.

We do not enter into investments for trading or speculative purposes and have not used any derivative financial instruments to manage our interest rate risk exposure. We have not been exposed to, nor do we anticipate being exposed to, material risks due to changes in interest rates. The interest rate on our outstanding debt is variable based on LIBOR, the Prime Rate, or the Federal Funds Rate. A hypothetical 1% change in the interest rate on our outstanding debt would have resulted in a $2.0 million change to interest expense during 2018.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

The financial statements and supplementary financial information required to be filed under this Item 8 are presented beginning on page F-1 in Part IV, Item 15 of this annual report on Form 10-K and are incorporated herein by reference.

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

None.

ITEM 9A. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

As required by Rule 13a-15(b) under the Exchange Act, we carried out an evaluation under the supervision and with the participation of our management, including our Chief Executive Officer and Chief Financial Officer, of the effectiveness of the design and operation of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act) as of the end of the period covered by this report. There are inherent limitations to the effectiveness of any system of disclosure controls and procedures, including the possibility of human error and the circumvention or overriding of the controls and procedures. Accordingly, even effective disclosure controls and procedures can only provide reasonable assurance of achieving their control objectives. We evaluated the effectiveness of our disclosure controls and procedures as of December 28, 2018, with the participation of our CEO and CFO. Based on this evaluation, our CEO and CFO concluded that our disclosure controls and procedures were effective as of December 28, 2018.

Management's Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act). With the participation of our Chief Executive Officer and Chief Financial Officer, our management evaluated the effectiveness of our internal control over financial reporting based on the framework issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO") in Internal Control—Integrated Framework (2013). Because of its inherent limitations, internal control over financial reporting is not intended to provide absolute assurance that a misstatement of our financial statements would be prevented or detected. Based on that assessment, management has concluded that our internal control over financial reporting was effective as of December 28, 2018 to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements in accordance with GAAP.

We have not engaged an independent registered accounting firm to perform an audit of our internal control over financial reporting as of any balance sheet date or for any period reported in our financial statements. Our independent public registered accounting firm will first be required to attest to the effectiveness of our internal control over financial reporting for our Annual Report on Form 10-K for the first year we are no longer an "emerging growth company" as defined by the JOBS Act.

Changes in Internal Control Over Financial Reporting

A company's internal control over financial reporting is a process designed by, or under the supervision of, a company's principal executive and principal financial officers, or persons performing similar functions, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements in accordance with GAAP. Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. In addition, 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 policies or procedures may deteriorate. If we cannot provide reliable financial information, our business, operating results and share price could be negatively impacted.

In connection with the adoption of new revenue recognition accounting standards, as codified in ASC Topic 606, we implemented certain internal controls to ensure we adequately evaluated our contracts with our customers and properly assessed the impact of the new revenue recognition accounting standards on our financial statements to facilitate its adoption at the beginning of our first fiscal 2018 quarter. There were no significant changes to our internal control over financial reporting due to the adoption of the new accounting standards.

ITEM 9B. OTHER INFORMATION

The Compensation, Nominating, and Corporate Governance Committee (the "Committee") of our Board of Directors evaluates and reviews our executive compensation, programs, objectives and philosophy on an annual basis. The Committee engaged Radford to advise on our executive compensation programs in connection with the Committee's annual compensation review. Radford assisted in refining our executive compensation strategies and practices in comparison to similarly situated peer companies, including with respect to severance and change in control programs.

In connection with this review and based on market data provided by Radford, the Committee approved a new Select Severance Plan (the "Select Severance Plan") pursuant to which we will provide severance pay and other benefits to eligible participants (the "Participants" and each, a "Participant") in the event of such employee's termination under certain circumstances described therein. The effective date of the Select Severance Plan was March 6, 2019 (the "Effective Date").

The following summary of the Select Severance Plan does not purport to be complete and is subject to and qualified in its entirety by reference to the text of the Select Severance Plan filed as Exhibit 10.9 to this Annual Report on Form 10-K and incorporated herein by reference.

The Select Severance Plan provides eligible officers (each an "Officer Participant" and collectively, "Officer Participants") with the following benefits in the event of a termination of employment or service by us without "cause" (as defined in the Select Severance Plan) (and solely with respect to our CEO, upon resignation for "good reason" (as defined in the Select Severance Plan)):

- nine-month salary continuation (or 12 months in the case of the CEO);
- a pro rata portion (based on the number of days employed during the applicable performance period from when the separation from service occurs) of the Officer Participant's annual target cash performance bonus based on actual results;
- continued health insurance coverage at the active employee rate for a period up to nine months (or 12 months in the case of the CEO).

In lieu of the benefits described above, if a Participant is terminated without cause or terminates employment for "good reason" during (1) the 90 day period prior to our entry into a definitive agreement that results in a "change in control" (as defined in the Select Severance Plan) (such termination, a "Pre-CIC Termination") or (2) the period commencing on a change in control and ending 12 months later (such termination, a "Post-CIC Termination"), the Select Severance Plan provides Participants with the following benefits.

- in the case of Officer Participants, a lump sum amount in cash equal to the employee's base salary plus the employee's annual target cash performance bonus (or 2X such amount in the case of the CEO);
- in the case of Officer Participants, a pro rata portion (based on the number of days employed during the applicable performance period from when the separation from service occurs) of the employee's annual target cash performance bonus based on actual results;
- in the case of Officer Participants, continued health insurance coverage at the active employee rate for a period of up to twelve months (or 24 months in the case of the CEO);
- full vesting of any unvested stock-based awards and removal of restrictions with respected to restricted stock awards; and
- any stock option, stock appreciation right or similar award shall become fully exercisable.

The severance benefits payable under the Select Severance Plan are subject to: (1) the six month delay to the extent required under Section 409A of the Internal Revenue Code of 1986, as amended; (2) the execution and non-revocation of a general release of claims in favor of us within a specified time period; (3) the Participant's compliance with certain non-disparagement and confidentiality covenants following a termination; and (4) reduction to avoid any excise tax on "parachute payments," but only if the executive would benefit from such reduction as compared to paying the excise tax.

Any benefits payable under the Select Severance Plan supersede and are in lieu of any severance benefits and/or payments provided under any other agreements, arrangements or severance plans by and between the executive and us unless a Participant's employment or similar agreement provides for severance benefits that, in the aggregate, are more favorable to the Participant (in which case, such greater benefits will be paid under this Plan).

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The information required by this item is incorporated by reference to our Proxy Statement for our 2019 General Meeting to be filed with the SEC within 120 days after the close of the year ended December 28, 2018.

Code of Conduct

The Company has adopted a code of business ethics and conduct (the "Code of Conduct") that applies to all employees, officers and directors, including the principal executive officer, principal financial officer and principal accounting officer. The Code of Conduct is available on the Company's website at www.ichorsystems.com under the Investor Relations tab. The Company intends to post on its website all disclosures that are required by law or NASDAQ listing rules regarding any amendment to, or a waiver of, any provision of the Code of Conduct for the principal executive officer, principal financial officer, principal accounting officer or controller, or persons performing similar functions.

ITEM 11. EXECUTIVE COMPENSATION

The information required by this item is incorporated by reference to our Proxy Statement for our 2019 General Meeting to be filed with the SEC within 120 days after the close of the year ended December 28, 2018.

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

The information required by this item is incorporated by reference to our Proxy Statement for our 2019 General Meeting to be filed with the SEC within 120 days after the close of the year ended December 28, 2018.

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

The information required by this item is incorporated by reference to our Proxy Statement for our 2019 General Meeting to be filed with the SEC within 120 days after the close of the year ended December 28, 2018.

ITEM 14. PRINCIPAL ACCOUNTING FEES AND SERVICES

The information required by this item is incorporated by reference to our Proxy Statement for our 2019 General Meeting to be filed with the SEC within 120 days after the close of the year ended December 28, 2018.

PART IV

ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

(a) The following documents are filed as a part of this report:

(1) Financial Statements.

The following Consolidated Financial Statements are filed as part of this report under Item 8 "Financial Statements and Supplementary Data."

(2) Exhibits. Exhibits are listed on the Exhibit Index at the end of this report.

ITEM 16. FORM 10-K SUMMARY

Not applicable.

Report of Independent Registered Public Accounting Firm

To the Shareholders and Board of Directors
Ichor Holdings, Ltd.:

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheets of Ichor Holdings, Ltd. and subsidiaries (the Company) as of December 28, 2018 and December 29, 2017, the related consolidated statements of operations, shareholders' equity, and cash flows for each of the years in the three-year period ended December 28, 2018, and the related notes (collectively, the consolidated financial statements). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 28, 2018 and December 29, 2017, and the results of its operations and its cash flows for each of the years in the three-year period ended December 28, 2018, in conformity with U.S. generally accepted accounting principles.

Change in Accounting Principle

As discussed in Note 1 to the consolidated financial statements, the Company changed its method of accounting for revenue recognition beginning in 2018 due to the adoption of Accounting Standards Update ("ASU") 2014-09, *Revenue from Contracts with Customers* (*Topic 606*).

Basis for Opinion

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

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits, we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion.

Our audits included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ KPMG LLP

We have served as the Company's auditor since 2011.

Portland, Oregon
March 8, 2019

ICHOR HOLDINGS, LTD.
Consolidated Balance Sheets
(in thousands, except share and per share data)

	December 28, 2018	December 29, 2017
Assets		
Current assets:		
Cash	$ 43,834	$ 68,794
Restricted cash	—	510
Accounts receivable, net	40,287	49,249
Inventories, net	121,106	154,541
Prepaid expenses and other current assets	6,348	5,357
Current assets from discontinued operations	—	3
Total current assets	211,575	278,454
Property and equipment, net	41,740	34,380
Other noncurrent assets	906	1,052
Deferred tax assets, net	1,363	994
Intangible assets, net	56,895	73,405
Goodwill	173,010	169,399
Total assets	$ 485,489	$ 557,684
Liabilities and Shareholders' Equity		
Current liabilities:		
Accounts payable	$ 64,300	$ 121,405
Accrued liabilities	9,556	12,211
Other current liabilities	5,148	6,715
Current portion of long-term debt	8,750	6,490
Current liabilities from discontinued operations	—	400
Total current liabilities	87,754	147,221
Long-term debt, less current portion, net	192,117	180,247
Deferred tax liabilities	3,966	10,558
Other non-current liabilities	3,326	2,896
Total liabilities	287,163	340,922
Shareholders' equity:		
Preferred shares ($0.0001 par value; 20,000,000 shares authorized; zero shares issued and outstanding)	—	—
Ordinary shares ($0.0001 par value; 200,000,000 shares authorized; 22,234,508 and 25,892,162 shares outstanding, respectively; 26,574,037 and 25,892,162 shares issued, respectively)	2	3
Additional paid in capital	228,358	214,697
Treasury shares at cost (4,339,529 and zero shares, respectively)	(89,979)	—
Retained earnings	59,945	2,062
Total shareholders' equity	198,326	216,762
Total liabilities and shareholders' equity	$ 485,489	$ 557,684

ICHOR HOLDINGS, LTD.
Consolidated Statements of Operations
(in thousands, except share and per share data)

	Year Ended		
	December 28, 2018	December 29, 2017	December 30, 2016
Net sales	$ 823,611	$ 655,892	$ 405,747
Cost of sales	687,474	555,131	340,352
Gross profit	136,137	100,761	65,395
Operating expenses:			
Research and development	9,355	7,899	6,383
Selling, general, and administrative	47,448	37,802	28,126
Amortization of intangible assets	15,369	8,880	7,015
Total operating expenses	72,172	54,581	41,524
Operating income	63,965	46,180	23,871
Interest expense	9,987	3,277	4,370
Other income, net	(241)	(126)	(629)
Income from continuing operations before income taxes	54,219	43,029	20,130
Income tax benefit from continuing operations	(3,664)	(13,886)	(649)
Net income from continuing operations	57,883	56,915	20,779
Discontinued operations:			
Loss from discontinued operations before taxes	—	(722)	(4,077)
Income tax expense (benefit) from discontinued operations	—	(261)	40
Net loss from discontinued operations	—	(461)	(4,117)
Net income	57,883	56,454	16,662
Less: Undistributed earnings attributable to preferred shareholders	—	—	(15,284)
Net income attributable to ordinary shareholders	$ 57,883	$ 56,454	$ 1,378
Net income per share from continuing operations attributable to ordinary shareholders:			
Basic	$ 2.34	$ 2.27	$ 1.14
Diluted	$ 2.30	$ 2.17	$ 0.87
Net income per share attributable to ordinary shareholders:			
Basic	$ 2.34	$ 2.25	$ 0.92
Diluted	$ 2.30	$ 2.15	$ 0.70
Shares used to compute net income from continuing operations per share attributable to ordinary shareholders:			
Basic	24,706,542	25,118,031	1,503,296
Diluted	25,128,055	26,218,424	1,967,926
Shares used to compute net income per share attributable to ordinary shareholders:			
Basic	24,706,542	25,118,031	1,503,296
Diluted	25,128,055	26,218,424	1,967,926

ICHOR HOLDINGS, LTD.
Consolidated Statements of Shareholders' Equity
(in thousands, except share data)

	Preferred Shares		Ordinary Shares		Additional Paid-In Capital	Treasury Shares		Retained Earnings (Accumulated Deficit)	Total Shareholders' Equity
	Shares	Amount	Shares	Amount		Shares	Amount		
Balance at December 25, 2015	17,722,808	$ 142,728	65,409	$ —	$ 3,004	—	$ —	$ (71,054)	$ 74,678
Ordinary shares issued, net of transaction costs	—	—	5,877,778	—	47,103	—	—	—	47,103
Conversion of preferred shares to ordinary shares	(17,722,808)	(142,728)	17,722,808	2	142,726	—	—	—	—
Share-based compensation expense	—	—	—	—	3,216	—	—	—	3,216
Vesting of restricted shares	—	—	191,386	—	—	—	—	—	—
Net income	—	—	—	—	—	—	—	16,662	16,662
Balance at December 30, 2016	—	—	23,857,381	2	196,049	—	—	(54,392)	141,659
Ordinary shares issued from initial public offering, net of transaction costs	—	—	881,667	1	7,277	—	—	—	7,278
Ordinary shares issued from exercise of stock options			1,078,182	—	9,141			—	9,141
Ordinary shares issued from vesting of restricted share units	—	—	74,932	—	—	—	—	—	—
Share-based compensation expense	—	—	—	—	2,230	—	—	—	2,230
Net income	—	—	—	—	—	—	—	56,454	56,454
Balance at December 29, 2017	—	—	25,892,162	3	214,697	—	—	2,062	216,762
Ordinary shares issued from exercise of stock options	—	—	573,162	—	5,661	—	—	—	5,661
Ordinary shares issued from vesting of restricted share units	—	—	79,336	—	(91)	—	—	—	(91)
Ordinary shares issued from employee share purchase plan	—	—	29,377	—	514	—	—	—	514
Repurchase of ordinary shares	—	—	(4,339,529)	(1)	—	4,339,529	(89,979)	—	(89,980)
Share-based compensation expense	—	—	—	—	7,577	—	—	—	7,577
Net income	—	—	—	—	—	—	—	57,883	57,883
Balance at December 28, 2018	—	$ —	22,234,508	$ 2	$228,358	4,339,529	$(89,979)	$ 59,945	$ 198,326

ICHOR HOLDINGS, LTD.
Consolidated Statements of Cash Flows
(in thousands)

	Year Ended		
	December 28, 2018	December 29, 2017	December 30, 2016
Cash flows from operating activities:			
Net income	$ 57,883	$ 56,454	$ 16,662
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	23,064	12,509	9,497
Gain on sale of investments and settlement of note receivable	—	(241)	—
Share-based compensation	7,577	2,230	3,216
Deferred income taxes	(6,687)	(15,347)	(2,429)
Amortization of debt issuance costs	970	608	527
Changes in operating assets and liabilities, net of acquisitions:			
Accounts receivable, net	10,425	(1,059)	(9,007)
Inventories	35,126	(43,425)	(23,719)
Prepaid expenses and other assets	(685)	3,386	(3,381)
Accounts payable	(62,173)	22,612	36,761
Accrued liabilities	(3,518)	848	1,612
Other liabilities	(1,507)	228	(2,009)
Net cash provided by operating activities	60,475	38,803	27,730
Cash flows from investing activities:			
Capital expenditures	(13,920)	(8,226)	(4,268)
Cash paid for acquisitions, net of cash acquired	(1,443)	(180,955)	(17,407)
Proceeds from sale of intangible assets	—	—	230
Proceeds from sale of property, plant, and equipment	—	—	243
Proceeds from sale of investments and settlement note receivable	—	2,430	—
Net cash used in investing activities	(15,363)	(186,751)	(21,202)
Cash flows from financing activities:			
Issuance of ordinary shares, net of fees	—	7,278	47,103
Issuance of ordinary shares under share-based compensation plans	6,329	9,141	—
Employees' taxes paid upon vesting of restricted share units	(91)	—	—
Repurchase of ordinary shares	(89,980)	—	—
Debt issuance and modification costs	(2,092)	(1,520)	—
Borrowings on revolving credit facility	44,162	10,000	12,000
Repayments on revolving credit facility	(20,000)	—	(22,000)
Proceeds from term loan	—	140,000	15,000
Repayments on term loan	(8,910)	(295)	(30,171)
Net cash provided by (used in) financing activities	(70,582)	164,604	21,932
Net increase (decrease) in cash	(25,470)	16,656	28,460
Cash at beginning of year	69,304	52,648	24,188
Cash at end of year	$ 43,834	$ 69,304	$ 52,648
Supplemental disclosures of cash flow information:			
Cash paid during the period for interest	$ 8,273	$ 3,436	$ 3,686
Cash paid during the period for taxes	$ 2,278	$ 1,068	$ 103
Supplemental disclosures of non-cash activities:			
Capital expenditures included in accounts payable	$ 1,462	$ 723	$ 1,174

Note 1 – Organization and Summary of Significant Accounting Policies

Organization and Operations of the Company

Ichor Holdings, Ltd. and Subsidiaries (the "we", "us", "our", "Company") designs, develops, manufactures and distributes gas and liquid delivery subsystems and components purchased by capital equipment manufacturers for use in the semiconductor markets. We are headquartered in Fremont, California and have operations in the United States, United Kingdom, Singapore, Malaysia, and Korea.

On December 30, 2011, Ichor Systems Holdings, LLC consummated a sales transaction with Icicle Acquisition Holdings, LLC, a Delaware limited liability company. Shortly after consummation of the sale transaction, Icicle Acquisition Holdings, LLC changed its name to Ichor Holdings, LLC.

In March 2012, Ichor Holdings, LLC completed a reorganization of its legal structure, forming Ichor Holdings, Ltd., a Cayman Islands entity. Ichor Holdings, Ltd. is now the reporting entity and the ultimate parent company of the operating entities.

In January 2016, we decided to close our Kingston, New York facility which was the primary facility for the Precision Flow Technologies, Inc. ("PFT") subsidiary. In May 2016, we ceased operations in this facility and ended the relationship with the customer it served in this location. Our consolidated financial statements and accompanying notes for current and prior periods have been retroactively adjusted to present the results of operations of the Precision Flow Technologies, Inc. subsidiary as a discontinued operation. In addition, the assets and liabilities to be disposed of have been treated and classified as a discontinued operation. For more information on the discontinued operation see *Note 15 – Discontinued Operations*.

Basis of Presentation

These consolidated financial statements have been prepared in accordance with generally accepted accounting principles in the United States ("GAAP"). All intercompany balances and transactions have been eliminated upon consolidation. All financial figures presented in the notes to consolidated financial statements are in thousands, except share, per share, and percentage figures.

These consolidated financial statements include the following wholly owned subsidiaries of Ichor Holdings, Ltd.:

Name of Subsidiary	Jurisdiction of Incorporation, Organization, or Formation
Ichor Intermediate Holdings, Ltd.	Cayman Islands
Icicle Acquisition Holding Co-op	Netherlands
Icicle Acquisition Holding B.V.	Netherlands
Ichor Holdings Ltd.	Scotland
Ichor Systems Ltd.	Scotland
Ichor Holdings, LLC	Delaware
Ichor Systems, Inc.	Delaware
Ichor Systems Korea Ltd.	Korea
Ichor Systems Malaysia Sdn Bhd	Malaysia
Ichor Systems Singapore, PTE Ltd.	Singapore
Precision Flow Technologies, Inc.	New York
Ajax-United Patterns & Molds, Inc.	California
Cal-Weld, Inc.	California
Talon Innovations Corporations	Minnesota
Talon Innovations (FL) Corporation	Florida
Talon Innovations Korea	Korea
IAN Engineering Co., Ltd.	Korea

Public Offering

On December 14, 2016, we completed an initial public offering ("IPO") of 5,877,778 ordinary shares at a price to the public of $9.00 per share. We received net proceeds from the offering of $47.1 million after offering fees and expenses. The net proceeds were used to repay $40.0 million of loans outstanding under our Credit Facilities. In January 2017, we received $7.3 million, net of fees and expenses, from the exercise of the underwriters' over-allotment option to sell an additional 881,667 ordinary shares.

Year End

We use a 52 or 53 week fiscal year ending on the last Friday in December. The years ended December 28, 2018 and December 29, 2017 were both 52 weeks. The year ended December 30, 2016 was 53 weeks. All references to 2018, 2017, and 2016 are references to the fiscal years then ended.

Use of Estimates

The preparation of consolidated financial statements in conformity with accounting principles generally accepted in the U.S. 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 the reported amounts of revenue and expenses during the reporting periods presented. We base our estimates and judgments on historical experience and on various other assumptions that we believe are reasonable under the circumstances. Actual results could differ from the estimates made by management. Significant estimates include the fair value of assets and liabilities acquired in acquisitions, estimated useful lives for long-lived assets, allowance for doubtful accounts, inventory valuation, uncertain tax positions, fair value assigned to stock options granted, and impairment analysis for both definite-lived intangible assets and goodwill.

Revenue Recognition

We recognize revenue when control of promised goods or services is transferred to our customers, in an amount that reflects the consideration we expect to be entitled to in exchange for those goods or services. This amount is recorded as net sales in our consolidated statements of operations.

Transaction price – In most of our contracts, prices are generally determined by a customer-issued purchase order and generally remain fixed over the duration of the contract. Certain contracts contain variable consideration, including early-payment discounts and rebates. When a contract includes variable consideration, we evaluate the estimate of the variable consideration to determine whether the estimate needs to be constrained; therefore, we include the variable consideration in the transaction price only to the extent that it is probable that a significant reversal will not occur. Variable consideration estimates are updated at each reporting date. Historically, we have not incurred significant costs to obtain a contract. All amounts billed to a customer relating to shipping and handling are classified as net sales, while all costs incurred by us for shipping and handling are classified as cost of goods sold.

Performance obligations – Substantially all of our performance obligations pertain to promised goods (“products”), which are primarily comprised of fluid delivery subsystems, weldments, and other components. Most of our contracts contain a single performance obligation and are generally completed within twelve months. Product sales are recognized at a point-in-time, generally upon delivery, as such term is defined within the contract, as that is when control of the promised good has transferred. Products are covered by a standard assurance warranty, generally extended for a period of one to two years depending on the customer, which promises that delivered products conform to contract specifications. As such, we account for such warranties under ASC 460, *Guarantees*, and not as a separate performance obligation.

Contract balances – Accounts receivable represents our unconditional right to receive consideration from our customers. Accounts receivable are carried at invoice price less an estimate for doubtful accounts and estimated payment discounts. Payment terms vary by customer but are generally due within 15-60 days. Historically, we have not incurred significant payment issues with our customers. We had no significant contract assets or liabilities on our consolidated balance sheets in any of the periods presented.

Concentration of Credit Risk

Financial instruments that subject us to credit risk consist of accounts receivable, accounts payable and long-term debt. At December 28, 2018 and December 29, 2017, two customers represented, in the aggregate, approximately 40% and 61%, respectively, of the balance of accounts receivable.

We establish an allowance for doubtful accounts based upon the credit risk of specific customers, historical trends, and other information. Activity and balances related to the allowance for doubtful accounts is as follows:

		Allowance for doubtful accounts
Balance at December 25, 2015	$	123
Charges to costs and expenses		71
Write-offs		—
Balance at December 30, 2016		194
Charges to costs and expenses		62
Write-offs		—
Balance at December 29, 2017		256
Charges to costs and expenses		195
Write-offs and recoveries		(111)
Balance at December 28, 2018	$	340

We require collateral, typically cash, in the normal course of business if customers do not meet the criteria established for offering credit. If the financial condition of our customers were to deteriorate and result in an impaired ability to make payments, additions to the allowance may be required. Accounts receivable are written off when deemed uncollectible. Recoveries of accounts receivable previously written off are recorded to income when received.

We use qualified manufacturers to supply many components and subassemblies of our products. We obtain the majority of our components from a limited group of suppliers. A majority of the purchased components used in our products are customer specified. An interruption in the supply of a particular component would have a temporary adverse impact on our operating results.

We maintain cash balances at both United States-based and foreign-based commercial banks. Cash balances in the United States exceed amounts that are insured by the Federal Deposit Insurance Corporation (FDIC). The majority of the cash maintained in foreign-based commercial banks is insured by the government where the foreign banking institutions are based. Cash held in foreign-based commercial banks totaled $25.5 million and $36.4 million at December 28, 2018 and December 29, 2017, respectively, and at times exceeds insured amounts. No losses have been incurred at December 28, 2018 and December 29, 2017 for amounts exceeding the insured limits.

Fair Value Measurements

We estimate the fair value of financial assets and liabilities based upon comparison of such assets and liabilities to the current market values for instruments of a similar nature and degree of risk. We utilize valuation techniques that maximize the use of observable inputs and minimize the use of unobservable inputs to the extent possible. We determine fair value based on assumptions that market participants would use in pricing an asset or liability in the principal or most advantageous market. When considering market participant assumptions in fair value measurements, the following fair value hierarchy distinguishes between observable and unobservable inputs, which are categorized in one of the following levels:

- Level 1 Inputs: Unadjusted quoted prices in active markets for identical assets or liabilities accessible to the reporting entity at the measurement date
- Level 2 Inputs: Other than quoted prices included in Level 1 inputs that are observable for the asset or liability, either directly or indirectly, for substantially the full term of the asset or liability
- Level 3 Inputs: Unobservable inputs for the asset or liability used to measure fair value to the extent that observable inputs are not available, thereby allowing for situations in which there is little, if any, market activity for the asset or liability at the measurement date

There were no changes to our valuation techniques during 2018. We estimate that the recorded value of our financial assets and liabilities approximate fair value at December 28, 2018 and December 29, 2017.

We estimate the value of intangible assets on a nonrecurring basis based on an income approach utilizing discounted cash flows. Under this approach, we estimate the future cash flows from our asset groups and discount the income stream to its present value to arrive at fair value. Future cash flows are based on recently prepared operating forecasts. Operating forecasts and cash flows include, among other things, revenue growth rates that are calculated based on management's forecasted sales projections. A discount rate is utilized to convert the forecasted cash flows to their present value equivalent. The discount rate applied to the future cash flows includes a subject-company risk premium, an equity market risk premium, a beta, and a risk-free rate. As this approach contains unobservable inputs, the measurement of fair value for intangible assets is classified as Level 3.

Inventories

Inventories are stated at the lower of cost or net realizable value. The majority of inventory values are based upon average costs. We analyze inventory levels and record write-downs for inventory that has become obsolete, inventory that has a cost basis in excess of its expected net realizable value, and inventory in excess of expected customer demand. We assess the valuation of all inventories, including raw materials, work-in-process, finished goods and spare parts on a periodic basis. Obsolete inventory or inventory in excess of our estimated usage is written down to its estimated market value less costs to sell, if less than its cost. Inherent in our estimates of demand and market value in determining inventory valuation are estimates related to economic trends, future demand for our products and technological obsolescence of our products. If actual demand and market conditions are less favorable than our projections, additional inventory write-downs may be required. If the inventory value is written down to its net realizable value, and subsequently there is an increased demand for the inventory at a higher value, the increased value of the inventory is not realized until the inventory is sold either as a component of a subsystem or as separate inventory.

Property and Equipment

Property, plant and equipment are stated at cost, less accumulated depreciation. Depreciation is computed using the straight-line method over the following estimated useful lives:

	Estimated useful lives of PP&E
Machinery	5-10 years
Leasehold improvements	Lesser of 10 years or lease term
Computer software, hardware, and equipment	3-5 years
Office furniture, fixtures, and equipment	5-7 years
Vehicles	5 years

Maintenance and repairs that neither add materially to the value of the asset nor appreciably prolong its useful life are charged to expense as incurred. Gains or losses on the disposal of property and equipment are included in selling, general and administrative expenses on the consolidated statements of operations.

Long-Lived Assets

Long-lived assets are reviewed for impairment whenever events or changes in circumstances indicate, in management's judgment, that the carrying amount of an asset (or asset group) may not be recoverable. In analyzing potential impairments, projections of future cash flows from the asset group are used to estimate fair value. If the sum of the expected future undiscounted cash flows is less than the carrying amount of the asset group, a loss is recognized for the difference between the estimated fair value and the carrying value of the asset group. The projections are based on assumptions, judgments and estimates of revenue growth rates for the related business, anticipated future economic, regulatory and political conditions, the assignment of discount rates relative to risk, and estimates of terminal values. At December 28, 2018 and December 29, 2017, intangible assets passed the recoverability test resulting in no impairment.

Intangible Assets

We account for intangible assets that have a definite life and are amortized on a basis consistent with their expected cash flows over the following estimated useful lives:

	Estimated useful lives of intangibles
Trademarks	10 years
Customer relationships	6-10 years
Developed technology	7-10 years

Goodwill

Goodwill represents the future economic benefits arising from other assets acquired in a business combination that are not individually identified and separately recognized. We review goodwill for impairment annually and whenever events or changes in circumstances indicate the carrying value of goodwill may not be recoverable. We first make a qualitative assessment of whether it is more likely than not that a reporting unit's fair value is less than its carrying amount before applying a quantitative goodwill impairment test. Under the quantitative test, the fair value of the reporting unit is compared to its carrying value and an impairment loss is recognized for any excess of carrying amount over the reporting unit's fair value. Fair value of the reporting unit is determined using a discounted cash flow analysis. For purposes of testing goodwill for impairment, we have concluded that we operate as one reporting unit.

We performed a qualitative goodwill assessment at December 28 2018 and December 29, 2017. This assessment indicated that it was more likely than not our reporting unit's fair value exceeded its carrying value.

Research and Development Costs

Research and development costs are expensed as incurred.

Special Bonus

On August 11, 2015, our Board of Directors instituted a special bonus to certain members of management totaling $3.1 million. In December 2016 our Board of Directors approved that all remaining special bonus not yet earned had been earned, resulting in a $0.6 million expense in 2016. There were no such bonuses instituted in 2018 or 2017.

Share-Based Payments

We use the Black-Scholes option-pricing model to value the awards on the date of grant. We use the simplified method to estimate the expected term of share-based awards for all periods as we do not have sufficient history to estimate the weighted average expected term. The risk-free interest rate is based on the U.S. Treasury rates in effect on the corresponding date of grant. Estimated volatility is based on the historical volatility of ours and similar entities' publicly traded shares.

Income Taxes

We recognize deferred income taxes using the asset and liability method of accounting for income taxes. Under the asset and liability method, deferred income taxes are recognized for differences between the financial reporting and tax bases of assets and liabilities at enacted statutory tax rates in effect for the years in which the differences are expected to reverse. The effect on deferred taxes of a change in tax rates is recognized in income in the period that includes the enactment date. Valuation allowances are established when necessary to reduce deferred tax assets to the amount expected to be realized. Income tax benefit for the current year differs from the statutory rate primarily as a result of the impact of foreign operations and discrete tax benefits recorded in connection with our historical acquisitions, stock option exercises, and the release of the valuation allowance against certain foreign tax credits that are now expected to be utilized as a result of the analysis performed related to the Tax Cuts and Jobs Act passed in 2017.

When tax returns are filed, it is highly certain that some positions taken would be sustained upon examination by the taxing authorities, while others may be subject to uncertainty about the merits of the position taken or the amount of the position that would be ultimately sustained. The benefit of a tax position is recognized in the consolidated financial statements in the period during which, based on all available evidence, management believes it is more likely than not that the position will be sustained upon examination, including the resolution of appeals or litigation processes, if any. Tax positions taken are not offset or aggregated with other positions. Tax positions that meet the more-likely-than-not recognition threshold are measured as the largest amount of tax benefit that is more than 50% likely of being realized upon settlement with the applicable taxing authority. The portion of the benefits associated with tax positions taken that exceeds the amount measured as described above is reflected as a liability for unrecognized tax benefits in our consolidated balance sheets along with any associated interest and penalties that would be payable to the taxing authorities upon examination. We recognize interest and penalties as a component of income tax expense.

Foreign Operations

The functional currency of our international subsidiaries located in the United Kingdom, Singapore, and Malaysia, is the U.S. dollar. Transactions denominated in currencies other than the functional currency generate foreign exchange gains and losses that are included in other income, net on our consolidated statements of operations. Substantially, all of our sales and agreements with third-party suppliers provide for pricing and payments in U.S. dollars and, therefore, are not subject to material exchange rate fluctuations. Foreign operations consist of revenue of $379.1 million, $346.0 million, and $241.7 million during 2018, 2017, and 2016, respectively. Assets of foreign operations totaled $157.0 million and $127.2 million at December 29, 2017 and December 30, 2016, respectively.

Accounting Pronouncements Recently Adopted

In May 2014, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Updated ("ASU") 2014-09, *Revenue from Contracts with Customers (Topic 606)*, which supersedes nearly all existing revenue recognition guidance. Subsequent to the issuance of ASU 2014-09, the FASB clarified the guidance through several ASUs. We adopted Accounting Standards Codification ("ASC") Topic 606, *Revenue from Contracts with Customers*, on December 30, 2017, the first day of fiscal year 2018, using the modified retrospective method. After assessing our contracts with our customers, we determined that there was not a significant change to the nature, timing, and extent of our revenues under the new standard. Accordingly, we did not make a cumulative-effect adjustment to retained earnings on December 30, 2017, as there was no adjustment to be made.

In August 2016, the FASB issued ASU 2016-15, *Statement of Cash Flows – Classification of Certain Cash Receipts and Cash Payments*. The amendment provides and clarifies guidance on the classification of certain cash receipts and cash payments in the statement of cash flows to eliminate diversity in practice. We adopted ASU 2016-15 on December 30, 2017, the first day of fiscal year 2018, which did not have a significant impact on our consolidated financial statements.

In January 2017, the FASB issued ASU 2017-01, *Business Combinations (Topic 805): Clarifying the Definition of a Business*. The amendments in this update clarify the definition of a business with the objective of adding guidance to assist entities with evaluating whether transactions should be accounted for as acquisitions (or disposals) of assets or businesses. We adopted ASU 2017-01 on December 30, 2017, the first day of fiscal year 2018, which did not have a significant impact on our consolidated financial statements.

In May 2017, the FASB issued ASU 2017-09, *Compensation-Stock Compensation (Topic 718) – Scope of Modification Accounting*, which provides guidance about which changes to the terms or conditions of a share-based payment award require an entity to apply modification accounting in Topic 718. We adopted ASU 2017-09 on December 30, 2017, the first day of fiscal year 2018, which did not have a significant impact on our consolidated financial statements.

Accounting Pronouncements Recently Issued

In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842)*, which consists of a comprehensive lease accounting standard. Under the new standard, assets and liabilities arising from most leases will be recognized on the balance sheet. Leases will be classified as either operating or financing, and the lease classification will determine whether expense is recognized on a straight-line basis (operating leases) or based on an effective interest method (financing leases). The standard also contains expanded disclosure requirements regarding the amounts, timing, and uncertainties of cash flows related to leasing activities.

The new standard is effective for interim and annual periods beginning after December 15, 2018. In July 2018, the FASB issued ASU 2018-11, *Leases (Topic 842): Targeted Improvements*, which provides an optional transition method allowing entities to initially apply the new lease standard at the adoption date and recognize a cumulative-effect adjustment to the opening balance of retained earnings in the period of adoption. We plan to use the optional transition method and apply the lease standard as of December 29, 2018, the first day of fiscal year 2019.

The new standard provides a number of practical expedients in transition. We will elect the package of practical expedients, which permits us not to reassess under the new standard our prior conclusions about lease identification, lease classification, and initial direct costs. We will elect to not recognize short-term leases, those with an initial term of 12 months or less, on our consolidated balance sheets.

We expect the new standard to have a material effect on our consolidated financial statements. While we continue to assess all of the effects of adoption, we currently believe the most significant effects relate to the recognition of new right-of-use ("ROU") assets and lease liabilities on our balance sheet for our facilities operating leases and the new disclosure requirements about our leasing activities. Upon adoption of the standard, we anticipate recording lease liabilities and ROU assets to our consolidated balance sheet of approximately $17-22 million. We do not anticipate a significant cumulative-effect adjustment to the opening balance of retained earnings, and we don't anticipate the standard to have a material impact on our consolidated statements of income or cash flows. We are evaluating the disclosure requirements and collecting the relevant data in preparation for disclosure in our first quarter 2019 consolidated financial statements, and we are continuing to review our existing contracts for potential embedded leases.

In June 2018, the FASB issued ASU 2018-07, *Compensation-Stock Compensation (Topic 718): Improvements to Non-Employee Share-Based Payment Accounting*. This standard is intended to reduce cost and complexity and to improve financial reporting for share-based payments issued to nonemployees. ASU 2018-07 expands the scope of ASC Topic 718, which currently only includes share-based payments issued to employees, to also include share-based payments issued to nonemployees for goods and services. The provisions are effective for annual periods beginning after December 15, 2018. We do not expect this ASU to have a material impact on our consolidated financial statements.

Note 2 – Acquisitions

IAN Engineering Co., Ltd.

On April 19, 2018, we completed the acquisition, via stock purchase, of IAN Engineering Co., Ltd. ("IAN"), a Seoul-based leader in providing locally-sourced design and manufacturing of gas delivery systems to customers in South Korea, for an aggregate purchase price of $6.5 million, inclusive of $5.3 million paid at closing and contingent consideration with a fair value of $1.3 million. Contingent consideration consisted of an earn-out liability that became payable in 2019 and 2020 if certain financial targets were achieved. During 2018, we determined those financial targets would not be met and, therefore, derecognized the earn-out liability, resulting in a gain of $1.3 million recognized in operating income on our consolidated statements of income. As this determination was made because of facts and circumstances that arose after the acquisition date, there was no change to total acquisition consideration. IAN provides us exposure to and growth opportunities in the South Korean semiconductor capital equipment market.

The following table presents the preliminary purchase price allocation as of April 19, 2018 and December 28, 2018. Measurement period adjustments recognized in 2018 relate to the fair value of IAN's opening balance of deferred taxes.

	Preliminary Allocation April 19, 2018	2018 Measurement Period Adjustment	Preliminary Allocation December 28, 2018
Cash acquired	$ 3,952	$ —	$ 3,952
Accounts receivable	863	—	863
Inventories	1,870	—	1,870
Prepaid expenses and other current assets	56	—	56
Property and equipment	396	—	396
Other noncurrent assets	101	—	101
Intangible assets	1,559	—	1,559
Goodwill	2,856	6	2,862
Accounts payable	(4,193)	—	(4,193)
Accrued and other current liabilities	(452)	—	(452)
Deferred tax liabilities	(383)	(6)	(389)
Other non-current liabilities	(82)	—	(82)
Total acquisition consideration	$ 6,543	$ —	$ 6,543

We preliminarily allocated $1.6 million to customer relationships with an amortization period of 6 years. Goodwill recognized from the acquisition was primarily attributed to an assembled workforce and expected synergies and is not tax deductible. The allocation of acquisition consideration for IAN is preliminary as we have not obtained all of the information to finalize our procedures on the opening balance sheet or the allocation between goodwill and intangible assets. We have recorded allocations based on information currently available.

Our consolidated statements of operations for 2018 include approximately eight months of IAN operating activity, including revenue of $7.7 million.

Pro forma financial information has not been provided for the acquisition of IAN as it was not material to our operations and overall financial position.

Talon Innovations Corporation

On December 11, 2017 we completed the acquisition, via stock purchase, of Talon Innovations Corporation ("Talon"), a Minnesota-based leader in the design and manufacturing of high precision machined parts used in leading edge semiconductor tools, for $137.8 million. Talon expanded our capacity and capabilities in the area of component manufacturing for gas and chemical delivery tools used in semiconductor manufacturing and other industrial applications.

The following table presents the preliminary purchase price allocation as of December 11, 2017 and the final allocation as of December 28, 2018. Measurement period adjustments recognized in 2018 primarily relate to the fair value of Talon's opening balance of accounts receivable, inventory, income taxes payable, deferred taxes, developed technology, and other working capital amounts.

	Preliminary Allocation December 11, 2017	2018 Measurement Period Adjustment	Final Allocation December 11, 2018
Cash acquired	$ 5,586	$ —	$ 5,586
Accounts receivable	11,471	600	12,071
Inventories	19,399	209	19,608
Prepaid expenses and other current assets	182	—	182
Property and equipment	16,655	—	16,655
Other noncurrent assets	76	—	76
Intangible assets	38,000	(2,700)	35,300
Goodwill	74,594	892	75,486
Accounts payable	(4,706)	—	(4,706)
Accrued liabilities	(2,767)	170	(2,597)
Other current liabilities	(1,838)	972	(866)
Deferred tax liabilities	(19,652)	652	(19,000)
Total acquisition consideration	$ 137,000	$ 795	$ 137,795

We allocated $32.4 million to customer relationships and $2.9 million to intellectual property with weighted average amortization periods of 6 years and 10 years, respectively. Goodwill recognized from the acquisition was primarily attributed to an assembled workforce and expected synergies and is not tax deductible. We incurred transaction costs of $1.5 million in connection with the acquisition during 2017. The fair value adjustment to inventory as part of our purchase price allocation resulted in a $4.5 million and $1.6 million charge to cost of sales during 2018 and 2017, respectively.

Our consolidated statement of operations for 2017 includes approximately 3 weeks of Talon operating activity, which is not material to our 2017 results of operations.

Cal-Weld, Inc.

On July 27, 2017, we completed the acquisition, via stock purchase, of Cal-Weld, Inc. ("Cal-Weld"), a California-based leader in the design and fabrication of precision, high purity industrial components, subsystems, and systems, for $56.2 million. Cal-Weld expanded our capacity and capabilities in the area of component manufacturing for gas delivery tools used in semiconductor manufacturing.

The following table presents the preliminary purchase price allocation as of July 27, 2017 and the final allocation on June 29, 2018. Measurement period adjustments recognized in 2017 and 2018 primarily relate to the fair value of Cal-Weld's opening balance of inventory, income taxes payable, and other working capital amounts.

	Preliminary Allocation July 27, 2017	2017 Measurement Period Adjustment	2018 Measurement Period Adjustment	Final Allocation June 29, 2018
Cash acquired	$ 7,337	$ —	$ —	$ 7,337
Accounts receivable	10,318	—	—	10,318
Inventories	20,836	—	(388)	20,448
Prepaid expenses and other current assets	287	113	—	400
Property and equipment	1,639	—	—	1,639
Other noncurrent assets	587	—	—	587
Intangible assets	12,140	—	—	12,140
Goodwill	17,957	(223)	(143)	17,591
Accounts payable	(5,991)		—	(5,991)
Accrued liabilities	(2,016)	79	(173)	(2,110)
Other non-current liabilities	(908)	—	—	(908)
Deferred tax liabilities	(5,307)	31	11	(5,265)
Total acquisition consideration	$ 56,879	$ —	$ (693)	$ 56,186

We allocated $11.5 million to customer relationships and $0.7 million to order backlog with weighted average amortization periods of 6 years and 6 months, respectively. Goodwill recognized from the acquisition was primarily attributed to an assembled workforce and expected synergies and is not tax deductible. We incurred transaction costs of $1.9 million in connection with the acquisition during 2017. The fair value adjustment to inventory as part of our purchase price allocation resulted in a $3.6 million charge to cost of sales during 2017.

Our consolidated statement of operations for 2017 includes approximately 5 months of Cal-Weld operating activity, including revenue of $53.0 million and net income from continuing operations of $6.7 million.

Ajax-United Patterns & Molds, Inc.

On April 12, 2016, we completed the acquisition, via stock purchase, of Ajax-United Patterns & Molds, Inc. ("Ajax"), a California-based manufacturer of complex plastic and metal products used in the medical, biomedical, semiconductor, data communication and food processing equipment industries, for $17.6 million. The acquisition allows us to manufacture and assemble the complex plastic and metal products required by the medical, biomedical, semiconductor and data communication equipment industries.

The following table presents the preliminary purchase price allocation as of April 12, 2016 and the final allocation on April 12, 2017. Measurement period adjustments recognized in 2016 and 2017 are primarily related to finalization of the valuation of deferred tax liabilities and net identifiable assets and liabilities.

	Preliminary Allocation April 12, 2016	2016 Measurement Period Adjustment	2017 Measurement Period Adjustment	Final Allocation April 12, 2017
Cash acquired	$ 187	$ —	$ —	$ 187
Accounts receivable	1,245	5	—	1,250
Inventories	3,236	—	—	3,236
Prepaid expenses and other current assets	77	—	8	85
Property and equipment	1,545	—	(78)	1,467
Other noncurrent assets	2,948	—	—	2,948
Intangible assets	8,130	(100)	—	8,030
Goodwill	4,629	2,449	(22)	7,056
Accounts payable and accrued liabilities	(4,403)	(83)	9	(4,477)
Deferred tax liabilities	—	(2,271)	83	(2,188)
Total acquisition consideration	$ 17,594	$ —	$ —	$ 17,594

We allocated $8.0 million to customer relationships with a weighted average amortization periods of 10 years. Goodwill recognized from the acquisition was primarily attributed to an assembled workforce and expected synergies and is not tax deductible. We incurred transaction costs of $1.5 million in 2016 in connection with the acquisition.

Our consolidated statement of operations for 2016 includes approximately 8 months of Ajax operating activity, including revenue of $20.0 million and operating income of $0.6 million.

Pro forma financial information has not been provided for the acquisition of Ajax as it was not material to our operations and overall financial position.

Note 3 – Inventories

Inventory consists of the following:

	December 28, 2018	December 29, 2017
Raw materials	$ 90,713	$ 91,109
Work in process	20,852	42,186
Finished goods	17,233	27,268
Excess and obsolete adjustment	(7,692)	(6,022)
Total inventories, net	$ 121,106	$ 154,541

The following table presents changes to our excess and obsolete adjustment:

	Excess and obsolete adjustment
Balance at December 25, 2015	$ (6,132)
Charge to cost of sales	(3,921)
Disposition of inventory	1,973
Balance at December 30, 2016	(8,080)
Charge to cost of sales	(909)
Disposition of inventory	2,967
Balance at December 29, 2017	(6,022)
Charge to cost of sales	(1,871)
Disposition of inventory	201
Balance at December 28, 2018	$ (7,692)

Note 4 – Property and Equipment

Property and equipment consist of the following:

	December 28, 2018	December 29, 2017
Machinery	$ 29,885	$ 23,464
Leasehold improvements	15,333	15,329
Computer software, hardware and equipment	4,884	4,551
Office furniture, fixtures and equipment	1,058	868
Vehicles	26	51
Construction-in-process	9,514	2,771
	60,700	47,034
Less accumulated depreciation	(18,960)	(12,654)
Total property and equipment, net	$ 41,740	$ 34,380

Depreciation expense for 2018, 2017, and 2016 was $7.7 million, $3.6 million, and $2.5 million, respectively.

Note 5 – Intangible Assets and Goodwill

Definite-lived intangible assets consist of the following:

	December 28, 2018				
	Gross value	Accumulated amortization	Accumulated impairment charges	Carrying amount	Weighted average useful life
Trademarks	$ 9,690	$ (6,781)	$ —	$ 2,909	10.0 years
Customer relationships	82,986	(31,308)	—	51,678	7.8 years
Developed technology	2,900	(592)	—	2,308	10.0 years
Total intangible assets	$ 95,576	$ (38,681)	$ —	$ 56,895	

	December 29, 2017				
	Gross value	Accumulated amortization	Accumulated impairment charges	Carrying amount	Weighted average useful life
Trademarks	$ 9,690	$ (5,814)	$ —	$ 3,876	10.0 years
Customer relationships	81,427	(20,060)	—	61,367	7.8 years
Developed technology	22,990	(14,938)	—	8,052	7.7 years
Backlog	660	(550)	—	110	0.5 years
Total intangible assets	$ 114,767	$ (41,362)	$ —	$ 73,405	

Future projected annual amortization expense consists of the following:

		Future amortization expense
2019	$	12,579
2020		12,579
2021		12,579
2022		8,765
2023		7,541
Thereafter		2,852
	$	56,895

The following tables present the changes to goodwill:

		Goodwill
Balance at December 25, 2015	$	70,015
Acquisitions		7,078
Balance at December 30, 2016		77,093
Acquisitions		92,306
Balance at December 29, 2017		169,399
Acquisitions		3,611
Balance at September 28, 2018	$	173,010

Note 6 – Commitments and Contingencies

Operating Leases

We lease facilities under various non-cancellable operating leases expiring through 2024. In addition to base rental payments, we are responsible for utilities and our proportionate share of operating expenses. Escalating rental payments are recognized on a straight-line basis over the lease term. Rent expense for 2018, 2017, and 2016, was $5.5 million, $3.6 million, and $2.9 million, respectively. Future minimum lease payments for non-cancelable operating leases are as follows:

		Future minimum lease payments
2019	$	4,910
2020		4,873
2021		4,356
2022		3,820
2023		1,103
Thereafter		120
	$	19,182

Litigation

We are periodically involved in legal actions and claims that arise as a result of events that occur in the normal course of operations. The ultimate resolution of these actions is not expected to have a material adverse effect on our financial position or results of operations.

Note 7 – Income Taxes

In December 2017, the Tax Cuts and Jobs Act (the “2017 Tax Act”) was enacted. The 2017 Tax Act included a number of changes to existing U.S. tax laws that impact us, most notably a reduction of the U.S. corporate income tax rate from 35% to 21% for tax years beginning after December 31, 2017. The 2017 Tax Act also provided for a one-time transition tax on certain foreign earnings and the acceleration of depreciation for certain assets placed into service after September 27, 2017, and prospective changes beginning in 2018, including the repeal of the domestic manufacturing deduction, acceleration of tax revenue recognition, capitalization of research and development expenditures, additional limitations on executive compensation, and limitations on the deductibility of interest.

We recognized the income tax effects of the 2017 Tax Act in our 2017 financial statements in accordance with Staff Accounting Bulletin ("SAB") No. 118, which provides SEC staff guidance for the application of ASC Topic 740, *Income Taxes*, in the reporting period in which the 2017 Tax Act was signed into law. As of December 28, 2018, the impact of the 2017 Tax Act is complete and is included in our provision for income taxes.

The changes to existing U.S. tax laws as a result of the 2017 Tax Act, which we believe have the most significant impact on the federal income taxes, are as follows:

Reduction of the U.S. Corporate Income Tax Rate

We measure deferred tax assets and liabilities using enacted tax rates that will apply in the years in which the temporary differences are expected to be recovered or paid. Accordingly, our deferred tax assets and liabilities were re-measured in 2017 to reflect the reduction in the U.S. corporate income tax rate from 35% to 21%, resulting in a $5.9 million increase in income tax benefit for 2017 and a corresponding $5.9 million decrease in net deferred tax liabilities at December 29, 2017.

Transition Tax on Foreign Earnings

In 2017, we recognized a provisional income tax expense of $0.7 million related to the one-time transition tax on certain foreign earnings. This resulted in a corresponding decrease in deferred tax assets due to the utilization of net operating loss carryforwards. This amount was adjusted in 2018 to $0.6 million, resulting in a tax benefit of $0.1 million recorded in 2018.

Global Intangible Low-Taxed Income ("GILTI")

Beginning in 2018, a portion of foreign subsidiaries' earnings, net of a return on investment in tangible assets, are subject to tax in the United States. During 2018, we recognized income tax expense of $0.1 million, net of foreign tax credits, related to GILTI.

Foreign Derived Intangible Income ("FDII") Deduction

Beginning in 2018, a deduction is allowed in the United States for a portion of foreign-derived income, net of a return on investment in tangible assets. During 2018, we recognized income tax benefit of $0.2 million related to the FDII deduction.

Foreign Tax Credits

Beginning in 2018, rules surrounding the utilization and carryforward of foreign tax credits in the United States were changed as a result of the 2017 Tax Act. Due to these changes, we released a valuation allowance on our accrued foreign tax credits which were previously limited under the tax code in effect before the 2017 Tax Act was enacted, resulting in a $4.1 million discrete benefit.

Income from continuing operations before tax was as follows:

	Year Ended		
	December 28, 2018	**December 29, 2017**	**December 30, 2016**
United States	$ 7,519	$ 370	$ (12,553)
Foreign	46,700	42,659	32,683
Income from continuing operations before tax	$ 54,219	$ 43,029	$ 20,130

Significant components of income tax benefit from continuing operations consist of the following:

	Year Ended		
	December 28, 2018	December 29, 2017	December 30, 2016
Current:			
Federal	$ 861	$ 809	$ —
State	316	249	(73)
Foreign	1,751	397	1,858
Total current tax expense	2,928	1,455	1,785
Deferred:			
Federal	(5,379)	(13,251)	(2,213)
State	(667)	(1,553)	—
Foreign	(546)	(537)	(221)
Total deferred tax benefit	(6,592)	(15,341)	(2,434)
Income tax benefit from continuing operations	$ (3,664)	$ (13,886)	$ (649)

The reconciliation of income tax computed at the U.S. federal statutory tax rates to income tax benefit from continuing operations consist of the following:

	Year Ended		
	December 28, 2018	December 29, 2017	December 30, 2016
Effective rate reconciliation:			
U.S. federal tax expense	$ 11,386	$ 15,060	$ 7,046
State income taxes, net	(329)	(373)	(324)
Permanent items	30	2,141	303
Foreign rate differential	(1,679)	(7,498)	(5,907)
Tax holiday	(7,583)	(7,437)	(5,714)
Credits	(1,158)	(1,818)	(794)
Tax contingencies	168	335	86
Share-based compensation	(1,270)	(5,438)	185
Withholding tax	727	840	1,435
Impact of re-characterizing intercompany debt to equity	—	1,409	—
Impact of Tax Cuts and Jobs Act	199	(6,188)	—
Other, net	(15)	(248)	168
Valuation allowance	(4,140)	(4,671)	2,867
Income tax benefit from continuing operations	$ (3,664)	$ (13,886)	$ (649)

Deferred income tax assets and liabilities from continuing operations consist of the following as of:

	December 28, 2018	December 29, 2017
Deferred tax assets:		
Inventory	$ 3,500	$ 2,825
Share-based compensation	1,295	866
Accrued payroll	896	1,202
Net operating loss carryforwards	534	4,020
Transaction costs	99	63
Tax credits	7,258	5,851
Other assets	1,747	1,956
Deferred tax assets	15,329	16,783
Valuation allowance	(112)	(4,252)
Total deferred tax assets	15,217	12,531
Deferred tax liabilities:		
Intangible assets	(13,789)	(18,283)
Property, plant and equipment	(3,687)	(3,069)
Other liabilities	(344)	(743)
Total deferred tax liabilities	(17,820)	(22,095)
Net deferred tax liability	$ (2,603)	$ (9,564)

At December 28, 2018, we had federal and state net operating loss carryforwards of $1.0 million and $5.8 million, respectively. The federal and state net operating loss carryforwards, if not utilized, will begin to expire in 2035 and 2032, respectively. At December 28, 2018, we had federal and state research and development credits of $1.7 million and $0.4 million, respectively. The federal and state research and development credits, if not utilized, will begin to expire in 2032 and 2022, respectively. Additionally, we had foreign tax credits of $1.5 million, which if not utilized, will begin to expire in 2022.

We have determined the amount of our valuation allowance based on our estimates of taxable income by jurisdiction in which we operate over the periods in which the related deferred tax assets will be recoverable. During 2017, the Company completed the acquisitions of Cal-Weld and Talon, resulting in a release of valuation allowance against the Company's net deferred tax assets. During the second quarter of 2018, as part of our evaluation of the 2017 Tax Act, we determined we would be able to utilize our foreign tax credit carryforwards, including our currently generated credits and accrued credits related to intercompany payables. As such, we recognized an addition $4.1 million benefit from releasing the associated valuation allowance. As of December 28, 2018, we believe it is more-likely-than-not that we will realize our U.S. deferred tax assets, with the exception of certain state and foreign net operating loss carryforwards we believe are not likely to be realized within the carryforward period.

The Company was granted a tax holiday for its Singapore operations effective 2011 through 2021. The net impact of the tax holiday in Singapore as compared to the Singapore statutory rate was a benefit of $7.6 million, $7.4 million, and $5.7 million during 2018, 2017, and 2016, respectively. Our income tax fluctuates based on the geographic mix of earnings and is calculated quarterly based on actual results pursuant to ASC Topic 740-270

As of December 28, 2018, we have recognized $2.3 million of unrecognized tax benefits in long-term liabilities and zero unrecognized tax benefits in noncurrent deferred tax liabilities on the accompanying consolidated balance sheet. If recognized, $1.6 million of this amount would impact our effective tax rate. We do not expect a significant decrease to the total amount of unrecognized tax benefits within the next twelve months.

Our ongoing practice is to recognize potential accrued interest and penalties related to unrecognized tax benefits within its global operations in income tax benefit. During 2018, we recognized a net increase of approximately $0.1 million in potential interest and penalties associated with uncertain tax positions in the consolidated statements of operations. At December 28, 2018, we had approximately $0.1 million and $0.4 million of interest and penalties, respectively, associated with uncertain tax positions, which are excluded from the unrecognized tax benefits table below. We recognize interest and penalties relating to unrecognized tax benefits as part of its income tax expense.

The following table summarizes the activity related to the Company’s unrecognized tax benefits:

	Unrecognized tax benefits
Balance at December 25, 2015	$ 558
Increase in tax positions for current year	118
Decrease in tax positions for prior period	(100)
Balance at December 30, 2016	576
Increase in tax positions for current year	458
Increase in tax positions for prior period	214
Increase in tax positions due to acquisitions	710
Decrease in tax positions for prior period	—
Impact of Tax Cuts and Jobs Act	(48)
Balance at December 29, 2017	1,910
Increase in tax positions for current year	407
Decreases in tax positions for prior period	(61)
Balance at December 28, 2018	$ 2,256

Our three major filing jurisdictions are the United States, Singapore and Malaysia. We are no longer subject to U.S. Federal examination for tax years ending before 2015, to state examinations before 2014, or to foreign examinations before 2013. However, to the extent allowed by law, the tax authorities may have the right to examine prior periods where net operating losses or tax credits were generated and carried forward, and make adjustments up to the amount of the net operating losses or credit carryforward.

Note 8 – Employee Benefit Programs

401(k) Plan

We sponsor a 401(k) plan available to employees of our U.S.-based subsidiaries. Participants may make salary deferral contributions not to exceed 50% of a participant’s annual compensation or the maximum amount otherwise allowed by law. Eligible employees receive a discretionary matching contribution equal to 50% of a participant’s deferral, up to an annual maximum of 4% of a participant’s annual compensation. For 2018, 2017, and 2016, matching contributions were $1.5 million, $0.7 million, and $0.3 million, respectively.

Note 9 – Credit Facilities

Long-term debt consists of the following:

	December 28, 2018	December 29, 2017
Term loan	$ 170,625	$ 179,535
Revolving credit facility	34,162	10,000
Total principal amount of long-term debt	204,787	189,535
Less unamortized debt issuance costs	(3,920)	(2,798)
Total long-term debt, net	200,867	186,737
Less current portion	(8,750)	(6,490)
Total long-term debt, less current portion, net	$ 192,117	$ 180,247

Maturities of long-term debt consist of the following:

	Future maturities of long-term debt
2019	$ 8,750
2020	8,750
2021	8,750
2022	8,750
2023	169,787
	$ 204,787

The weighted average interest rate across all credit facilities was 4.36%, 4.30%, and 5.04% during 2018, 2017, and 2016, respectively.

On August 11, 2015, we entered into a new credit agreement with a syndicate of lenders and repaid all outstanding indebtedness under our previous credit agreement. The credit agreement included a $55.0 million term loan facility and $20.0 million revolving credit facility. We recorded $2.6 million in debt issuance costs associated with the new credit agreement.

In April 2016, we acquired Ajax. To fund the acquisition, we amended our credit agreement, increasing the term loan facility by $15.0 million. The amendment did not meet the definition of an extinguishment and was accounted for as a modification.

In July 2017, we acquired Cal-Weld. To fund the acquisition, we amended our credit agreement, increasing the term loan facility by $20.0 million, increasing the revolving credit facility capacity by $20.0 million, and reducing our interest rate. The amendment did not meet the definition of an extinguishment and was accounted for as a modification.

In December 2017, we acquired Talon. To fund the acquisition, we amended our credit agreement, increasing the term loan facility by $120.0 million. The amendment did not meet the definition of an extinguishment and was accounted for as a modification.

On February 15, 2018, we amended and restated our credit agreement, which replaced our existing credit facilities with a $175.0 million term loan facility and a $125.0 million revolving credit facility. The amendment reduced our interest rate, depending on our leverage ratio, and extended the maturity date. We incurred debt issuance costs of $2.1 million in connection with the amendment. The amendment did not meet the definition of an extinguishment and was accounted for as a modification.

Our credit agreement is secured by our tangible and intangible assets and includes customary representations, warranties, and covenants. We are required to maintain a minimum fixed charge coverage ratio of 1.25 : 1 and a maximum leverage ratio 3.00 : 1.

Interest is charged at either the Base Rate or the Eurodollar rate (as such terms are defined in the credit agreement) at our option, plus an applicable margin. The Base Rate is equal to the higher of i) the Prime Rate, ii) the Federal Funds Rate plus 0.5%, or iii) the Eurodollar Rate plus 1.00%. The Eurodollar rate is equal to LIBOR. The applicable margin on Base Rate and Eurodollar Rate loans is 0.75-1.50% and 1.75-2.50% per annum, respectively, depending on our leverage ratio. We are also charged a commitment fee of 0.20%-0.35% on the unused portion of our revolver. Base Rate interest payments and commitment fees are due quarterly. Eurodollar interest payments are due on the last day of the applicable interest period. At December 28, 2018, the term loan and revolver bore interest at the Eurodollar rate option of 4.34% and 4.54%, respectively.

Principal payments of $2.2 million are due on a quarterly basis. The credit agreement matures on February 15, 2023.

Note 10 – Shareholders' Equity

Preferred Shares

Prior to the December 2016 IPO, our preferred shares had the following characteristics:

Conversion—The holders of preferred shares had the ability to convert to common stock at any time at the option of the holder, and the preferred shares would automatically convert to common stock upon a majority vote of the holders of preferred stock. The conversion price was equal to the ratio of the original issuance price divided by the conversion price.

Liquidation preference—In the event of any voluntary or involuntary liquidation, dissolution, or winding up of the Company, preferred shareholders were entitled to receive an amount per share equal to the greater of (i) the original issuance price plus any dividends declared but unpaid or (ii) an amount per share that would have been payable assuming conversion to common stock immediately prior to a liquidation event. Any remaining assets after the initial liquidation preference were to be distributed to common stock holders on a pro rata basis. If our assets were not sufficient for the full liquidation preference, the holders would share in any distribution on a pro rata basis.

Voting—Preferred shareholders had voting rights based on the number of shares of common stock into which the preferred shares could convert.

Dividends—Preferred shareholders were entitled to receive dividends when and if declared by our Board of Directors.

At the IPO, all outstanding preferred shares were converted into 17,722,808 ordinary shares.

Share Repurchase Program

In February 2018, our Board of Directors authorized a share repurchase program up to $50.0 million under which we may repurchase our ordinary shares in the open market or through privately negotiated transactions, depending on market conditions and other factors. Ordinary shares repurchased are recorded as treasury shares using the cost method on a first-in, first-out basis. In August 2018, our Board of Directors authorized a $50 million increase to the share repurchase program.

The following tables details our share repurchases for the periods indicated :

	Total Number of Shares Repurchased	Total Cost of Repurchase	Average Price Paid per Share	Amount Available Under Repurchase Program
	(dollars in thousands, except share and per share amounts)			
Amount available at February 15, 2018				$ 50,000
Quarter ended March 30, 2018	195,750	$ 5,000	$ 25.54	$ 45,000
Quarter ended June 29, 2018	1,061,855	24,970	$ 23.52	$ 20,030
Board authorization, $50 million increase, August 18, 2018				$ 70,030
Quarter ended September 28, 2018	1,424,359	30,348	$ 21.31	$ 39,683
Quarter ended December 28, 2018	1,657,565	29,662	$ 17.89	$ 10,021
Year ended December 28, 2018	4,339,529	$ 89,980	$ 20.73	$ 10,021

Note 11 – Related Party Transactions

We purchased certain parts from Ajax Foresight Global Manufacturing Sdn. Bhd. ("AFGM"), an investment acquired in conjunction with our acquisition of Ajax. Total purchases from AFGM were $0.2 million and $0.7 million in 2017 and 2016, respectively. In February 2017, we sold our investment in AFGM, and therefore no related party relationship exists on a go-forward basis.

We received advisory services from Francisco Partners Management, L.P. ("FPM"), an entity affiliated with certain of our former principal shareholders through our December 2016 IPO, at which time our advisory agreement with FPM was terminated. Under the advisory agreement, we were obligated to pay FPM an annual advisory fee equal to $1.5 million per year. Such advisory fee was waived for all periods presented in which the advisory agreement was effective.

We also received consulting services from Francisco Partners Consulting, LLC ("FPC"), an entity that provides consulting services to the private equity funds managed by FPM and their portfolio companies on a dedicated basis, through our December 2016 IPO, at which time our agreement with FPC was terminated and such services ceased. FPC is not an affiliate of us, FPM, or any of our former principal shareholders, and none of our former principal shareholders hold an in interest in FPC. During 2017, we received a refund from FPC for previously paid consulting fees of $0.3 million. During 2016 we paid $0.5 million to FPC for consulting services.

On January 10, 2011, PFT entered into a sublease agreement with Precision Flow Inc., which was majority owned by a member of our Board of Directors. During 2016, PFT paid $1.0 million in sublease rent to Precision Flow Inc. This board member resigned in 2016, and therefore no related party relationship exists on a go-forward basis.

We had purchases totaling $0.1 million from Ceres, an entity owned by a member of our Board of Directors during 2016. We had sales totaling $0.2 million to Ceres during 2016. This board member resigned in 2016, and therefore no related party relationship exists on a go-forward basis.

Note 12 – Share-Based Compensation

2016 Plan

In December 2016, we adopted the 2016 Omnibus Incentive Plan ("the 2016 Plan"). Under the 2016 Plan, 1,888,000 ordinary shares are reserved for issuance. The number of shares reserved for issuance under the 2016 Plan increases annually beginning in fiscal year 2018 by the lesser of (i) 2% of the ordinary shares outstanding on the last day of the immediately preceding fiscal year or (ii) such amount determined by our Board of Directors. Awards may be in the form of options, tandem and non-tandem stock appreciation rights, restricted shares, performance awards, and other share based awards and can be issued to employees, directors, and consultants. Canceled or expired awards under the 2016 Plan are returned to the incentive plan pool for future grants.

Awards granted under the 2016 Plan generally have a term of 7 years. Vesting generally occurs 25% on the first anniversary of the date of grant, and quarterly thereafter over the remaining 3 years. Upon vesting of restricted shares, employees may elect to have shares withheld to cover statutory minimum withholding taxes. Shares withheld are not reflected as an issuance of ordinary shares within our consolidated statements of shareholders' equity, as the shares were never issued, and the associated tax payments are reflected as financing activities within our consolidated statements of cash flows.

2012 Plan

In March 2012, we adopted the Ichor Holdings Ltd. 2012 Equity Incentive Plan (the "2012 Plan"). Under the 2012 Plan, we may grant either restricted shares or stock options to employees, directors and consultants. Our Board of Directors initially authorized the issuance of 21,000,000 stock options or restricted shares under the 2012 Plan. On October 25, 2013, our Board of Directors authorized the issuance of an additional 4,000,000 stock options or restricted shares under the 2012 Plan. Canceled or expired stock options or restricted shares are returned to the incentive plan pool for future grants.

Stock options granted under the 2012 Plan generally have a term of 7 years. Vesting generally occurs 25% on the first anniversary of the date of grant, and quarterly thereafter over the remaining 3 years.

There have been no issuances of equity-based awards under the 2012 Plan since the adoption of the 2016 Plan.

On January 18, 2018, in connection with the resignation of our former Chief Financial Officer, certain separation benefits became effective, which included a vesting acceleration of all outstanding and unvested stock options and restricted shares. Consequently, 88,445 stock options and 39,175 restricted shares vested on January 18, 2018. This was accounted for as an equity award modification under ASC Topic 718, resulting in $2.9 million in share-based compensation expense.

Stock Options

The table below sets forth the weighted average assumptions used to measure the fair value of options granted:

	Year Ended		
	December 28, 2018	December 29, 2017	December 30, 2016
Weighted average expected term	5 years	5 years	5 years
Risk-free interest rate	2.6%	1.9%	1.3%
Dividend yield	0.0%	0.0%	0.0%
Volatility	52.6%	47.7%	50.0%

The following table summarizes our stock option activity:

	Number of Stock Options				
	Time vesting	Performance vesting	Weighted average exercise price per share	Weighted average remaining contractual term	Aggregate intrinsic value (in thousands)
Outstanding, December 29, 2017	1,452,825	215,908	$ 12.87		
Granted	773,100	—	$ 24.64		
Exercised	(423,162)	(150,000)	$ 9.88		
Forfeited	(96,322)	—	$ 20.13		
Expired	—	—	$ —		
Outstanding, December 28, 2018	1,706,441	65,908	$ 18.57	4.7 years	$ 3,572
Exercisable, December 28, 2018	594,335	65,908	$ 12.05	2.7 years	$ 3,186

Fair value information for options granted and the intrinsic value of options exercised are as follows:

	Year Ended		
	December 28, 2018	December 29, 2017	December 30, 2016
Weighted average grant-date fair value of options granted	$ 11.81	$ 8.52	$ 4.18
Total intrinsic value of options exercised	$ 8,744	$ 16,423	N/A

At December 28, 2018, total unrecognized share-based compensation expense relating to stock options was $9.7 million, with a weighted average remaining service period of 2.9 years.

Restricted Shares

The following table summarizes our restricted share activity:

	Number of Restricted Shares	
	Time vesting	Weighted average grant date fair value
Unvested, December 29, 2017	153,281	$ 17.53
Granted	122,698	$ 23.89
Vested	(83,679)	$ 15.12
Forfeited	—	$ —
Unvested, December 28, 2018	192,300	$ 22.64

Fair value information for restricted shares granted and vested during is as follows:

	Year Ended		
	December 28, 2018	December 29, 2017	December 30, 2016
Weighted average grant-date fair value of shares granted	$ 23.89	$ 19.63	$ 9.42
Total fair value of shares vested	$ 2,041	$ 634	$ 1,484

At December 28, 2018, total unrecognized share-based compensation expense relating to restricted shares was $3.6 million, with a weighted average remaining service period of 2.8 years.

During 2018, 2017, and 2016, share-based compensation expense for stock options and restricted shares across all plans totaled $7.3 million, $2.2 million, and $3.2 million, respectively.

2017 ESPP

In May 2017, we adopted the 2017 Employee Stock Purchase Plan (the "2017 ESPP"). The 2017 ESPP grants employees the ability to designate a portion of their base-pay to purchase ordinary shares at a price equal to 85% of the fair market value of our ordinary shares on the first or last day of each 6 month purchase period. Purchase periods begin on January 1 or July 1 and end on June 30 or December 31, or the next business day if such date is not a business day. Shares are purchased on the last day of the purchase period.

The table below sets forth the weighted average assumptions used to measure the fair value of 2017 ESPP rights:

	Year Ended		
	December 28, 2018	December 29, 2017	December 30, 2016
Weighted average expected term	0.5 years	0.4 years	N/A
Risk-free interest rate	1.9%	1.1%	N/A
Dividend yield	0.0%	0.0%	N/A
Volatility	52.7%	47.8%	N/A

We recognize share-based compensation expense associated with the 2017 ESPP over the duration of the purchase period. We recognized $0.3 million and $0.1 million of share-based compensation expense associated with the 2017 ESPP during 2018 and 2017, respectively. At December 28, 2018, there was no unrecognized share-based compensation expense.

Note 13 – Segment Information

Our Chief Operating Decision Maker, the Chief Executive Officer, reviews our results of operations on a consolidated level and executive staff is structured by function rather than by product category. Therefore, we operate in one operating segment. Key resources, decisions, and assessment of performance are also analyzed on a company-wide level.

Foreign operations are conducted primarily through our wholly owned subsidiaries in Singapore and Malaysia. Our principal markets include North America, Asia and, to a lesser degree, Europe. Sales by geographic area represent sales to unaffiliated customers.

All information on sales by geographic area is based upon the location to which the products were shipped. The following table sets forth sales by geographic area (including sales from discontinued operations):

	Year Ended		
	December 28, 2018	December 29, 2017	December 30, 2016
United States of America	$ 502,750	$ 386,645	$ 243,237
Singapore	224,230	223,277	163,515
Europe	60,688	27,555	16,353
Other	35,943	18,415	9,218
Total net sales	$ 823,611	$ 655,892	$ 432,323

The following table sets forth our two major customers, which comprised 88%, 93%, and 97% of net sales from continuing operations in 2018, 2017, and 2016, respectively:

	Year Ended		
	December 28, 2018	December 29, 2017	December 30, 2016
Lam Research	$ 458,705	$ 350,372	$ 207,230
Applied Materials	$ 262,146	$ 259,234	$ 185,465

Note 14 – Earnings per Share

Basic and diluted net income per share attributable to ordinary shareholders was presented in conformity with the two-class method during 2016, as we had two classes of stock until our December 2016 IPO. We considered our convertible preferred shares to be a participating security as the convertible preferred shares participated in dividends with ordinary shareholders, when and if declared by our Board of Directors. In the event a dividend was paid on ordinary shares, the holders of preferred shares were entitled to a proportionate share of any such dividend as if they were holders of ordinary shares (on an as-if converted basis). The convertible preferred shares did not participate in incurred losses. In accordance with the two-class method, earnings allocated to these participating securities and the related number of outstanding shares of the participating securities, which include contractual participation rights in undistributed earnings, have been excluded from the computation of basic and diluted net income per share attributable to ordinary shareholders.

Under the two-class method, net income attributable to ordinary shareholders after deduction of preferred share dividends, if any, is determined by allocating undistributed earnings between the ordinary shares and the participating securities based on their respective rights to receive dividends. Basic net income per share attributable to ordinary shareholders is computed by dividing net income attributable to ordinary shareholders by the weighted-average number of ordinary shares outstanding during the period. All participating securities are excluded from basic weighted-average ordinary shares outstanding. Diluted net income per share attributable to ordinary shareholders is computed by dividing net income attributable to ordinary shareholders by the weighted average number of ordinary shares outstanding, including all potentially dilutive ordinary shares, if the effect of each class of potential shares of ordinary shares is dilutive.

For purposes of calculating EPS under the two-class method, an accounting policy election has been made to treat each income statement line item (net income from continuing operations, net income from discontinued operations, and net income) as an independent calculation and only allocate earnings to participating securities for those line items for which income is reported, as the participating securities do not have a contractual obligation to participate in losses. There is therefore no allocation of losses to participating securities for those line items for which a loss is reported. Under this method, the sum of the individual EPS income statement line items will not reconcile to the total net income per share.

Net income per share was not presented in conformity with the two-class method during 2018 and 2017, as we had only one class of stock outstanding during those years.

The following table sets forth the computation of our basic and diluted net income (loss) per share attributable to ordinary shareholders and a reconciliation of the numerator and denominator used in the calculation:

	Year Ended		
	December 28, 2018	December 29, 2017	December 30, 2016
Numerator:			
Net income from continuing operations	$ 57,883	$ 56,915	$ 20,779
Undistributed earnings attributed to preferred shareholders	—	—	(19,060)
Net income from continuing operations, attributable to ordinary shareholders	$ 57,883	$ 56,915	$ 1,719
Net loss from discontinued operations	$ —	$ (461)	$ (4,117)
Undistributed earnings attributed to preferred shareholders	—	—	—
Net loss from discontinued operations, attributable to ordinary shareholders	$ —	$ (461)	$ (4,117)
Net income	$ 57,883	$ 56,454	$ 16,662
Undistributed earnings attributed to preferred shareholders	—	—	(15,284)
Net income, attributable to ordinary shareholders	$ 57,883	$ 56,454	$ 1,378
Denominator:			
Weighted average ordinary shares outstanding	24,706,542	25,118,031	1,503,296
Dilutive effect of stock options	398,590	1,030,793	306,871
Dilutive effect of restricted shares	20,530	68,184	157,759
Dilutive effect of employee share purchase plan	2,393	1,416	—
Weighted average number of shares used in diluted per share calculation for net income and net income from continuing operations	25,128,055	26,218,424	1,967,926
Weighted average ordinary shares outstanding	24,706,542	25,118,031	1,503,296
Dilutive effect of stock options	—	—	—
Dilutive effect of restricted shares	—	—	—
Dilutive effect of employee share purchase plan	—	—	—
Weighted average number of shares used in diluted per share calculation for net loss from discontinued operations	24,706,542	25,118,031	1,503,296
Earnings per share attributable to ordinary shareholders:			
Net income from continuing operations:			
Basic	$ 2.34	$ 2.27	$ 1.14
Diluted	$ 2.30	$ 2.17	$ 0.87
Net loss from discontinued operations:			
Basic	$ —	$ (0.02)	$ (2.74)
Diluted	$ —	$ (0.02)	$ (2.74)
Net income:			
Basic	$ 2.34	$ 2.25	$ 0.92
Diluted	$ 2.30	$ 2.15	$ 0.70

An aggregated total of 516,070, 72,321, and 165,275 potential ordinary shares have been excluded from the computation of diluted net income per share attributable to ordinary shareholders for 2018, 2017, and 2016, respectively, because including them would have been antidilutive.

Note 15 – Discontinued Operations

In January 2016, we made the decision to shut down our Kingston, New York facility as this location consumed a significant amount of resources while contributing very little income. We completed the shutdown of the operations of the New York facility in May 2016 through abandonment as a buyer for the facility and operation was not found. We recorded lease abandonment and inventory charges of approximately $0.6 million and $2.0 million, respectively, in 2016. In 2017, we accrued for remaining costs of $0.3 million to occupy the facility through its lease expiration in February 2018. The discontinued operation was deemed to be fully disposed of at December 29, 2017. Accordingly, there was no activity associated with the discontinued operation during 2018.

The carrying amounts of the major classes of assets and liabilities of our Kingston, New York facility are reflected in the following table:

	December 29, 2017
Assets	
Current assets:	
Prepaid expenses and other current assets	$ 3
Total current assets	3
Total assets	$ 3
Liabilities	
Current liabilities:	
Accounts payable	$ 136
Accrued liabilities	255
Other current liabilities	9
Total current liabilities	400
Total liabilities	$ 400

The results of the discontinued operation were as follows:

	Year Ended	
	December 29, 2017	December 30, 2016
Net sales	$ —	$ 26,576
Cost of sales	—	28,077
Operating expenses:		
Research and development	—	262
Selling, general, and administrative	722	2,315
Total operating expenses	722	2,577
Operating loss	(722)	(4,078)
Other income, net	—	(1)
Loss from discontinued operations before income taxes	(722)	(4,077)
Income tax expense (benefit)	(261)	40
Loss from discontinued operations	$ (461)	$ (4,117)

Note 16 – Subsequent Events (unaudited)

Ordinary Share Repurchases

In January 2019, we repurchased 97,910 ordinary shares for a total cost of $1.6 million at an average price of $16.34 per share pursuant to our previously announced share repurchase program.

EXHIBIT INDEX

The following exhibits are filed with this Form 10-K or are incorporated herein by reference:

Exhibit Number	Description of Exhibit
3.1	Amended and Restated Memorandum and Articles of Association of Ichor Holdings, Ltd., effective as of December 9, 2016 (Incorporated by reference to Exhibit 3.1 to the current report on Form 8-K filed with the Securities and Exchange Commission on December 14, 2016).
10.1	Amended and Restated Credit Agreement, dated as of February 14, 2018, by and among Ichor Holdings, LLC, Ichor Systems, Inc., Precision Flow Technologies, Inc., Ajax United Patterns & Molds, Inc., Cal Weld, Inc., Talon Innovations Corporation, and Talon Innovations (FL) Corporation as borrowers, Bank of America, N.A., as administrative agent, and the financial institutions party thereto, as lenders (Incorporated by reference to Exhibit 10.1 to the current report on Form 8 K filed with the Securities and Exchange Commission on February 15, 2018).
10.2+	Employment Agreement, dated as of September 19, 2014, by and among Ichor Systems, Inc., Thomas Rohrs and, with respect to Sections 1.2 and 3.4 therein only, Ichor Holdings, Ltd (Incorporated by reference to Exhibit 10.7 to Ichor Holdings, Ltd's Registration Statement on Form S-1, filed with the Securities and Exchange Commission on November 14, 2016).
10.3+	Ichor Holdings, Ltd. 2016 Omnibus Incentive Plan (Incorporated by reference to Exhibit 10.11 to Ichor Holdings, Ltd's Amendment No. 2 to Registration Statement on Form S-1, filed with the Securities and Exchange Commission on November 29, 2016).
10.4+	Form of Incentive Stock Option Agreement (Incorporated by reference to Exhibit 10.12 to Ichor Holdings, Ltd's Amendment No. 2 to Registration Statement on Form S-1, filed with the Securities and Exchange Commission on November 29, 2016).
10.5+	Form of Restricted Stock Agreement (Incorporated by reference to Exhibit 10.13 to Ichor Holdings, Ltd's Amendment No. 2 to Registration Statement on Form S-1, filed with the Securities and Exchange Commission on November 29, 2016).
10.6+	Form of Nonqualifed Stock Option Agreement (Incorporated by reference to Exhibit 10.14 to Ichor Holdings, Ltd's Amendment No. 2 Registration Statement on Form S-1, filed with the Securities and Exchange Commission on November 29, 2016).
10.7+	Offer Letter, dated as of January 8, 2013, by and between Ichor Systems, Inc. and Philip Barros (Incorporated by reference to Exhibit 10.16 to Ichor Holdings, Ltd's Registration Statement on Form S-1, filed with the Securities and Exchange Commission on November 14, 2016).
10.8+	Offer Letter, dated as of September 30, 2015, by and between Ichor Systems, Inc. and Philip Barros (Incorporated by reference to Exhibit 10.17 to Ichor Holdings, Ltd's Registration Statement on Form S-1, filed with the Securities and Exchange Commission on November 14, 2016).
10.9*+	Select Severance Plan, dated as of March 6, 2019, by and among Ichor Holdings, Ltd. and certain officers and directors party thereto.
21.1*	List of subsidiaries
23.1*	Consent of KPMG LLP
31.1*	Certifications of Chief Executive Officer of the Company under Rule 13a-14(a) of the Securities Exchange Act of 1934, as amended, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2*	Certifications of Chief Financial Officer of the Company under Rule 13a-14(a) of the Securities Exchange Act of 1934, as amended, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1*	Certifications of Chief Executive Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002. This certification accompanies this report and shall not, except to the extent required by the Sarbanes-Oxley Act of 2002, be deemed filed for purposes of §18 of the Securities Exchange Act of 1934, as amended.
32.2*	Certifications of Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002. This certification accompanies this report and shall not, except to the extent required by the Sarbanes-Oxley Act of 2002, be deemed filed for purposes of §18 of the Securities Exchange Act of 1934, as amended.

* Filed herewith

\+ A management contract or compensatory arrangement required to be filed as an exhibit pursuant to Item 601 of Regulation S-K

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

Dated: March 8, 2019

ICHOR HOLDINGS, LTD.

By: /s/ Thomas M. Rohrs
Thomas M. Rohrs
Executive Chairman 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 dates indicated.

Signature	Name and Title	Date
/s/ Thomas M. Rohrs Thomas M. Rohrs	Executive Chairman, Director and Chief Executive Officer (Principal Executive Officer)	March 8, 2019
/s/ Jeffrey Andreson Jeffrey Andreson	Chief Financial Officer (Principal Accounting and Financial Officer)	March 8, 2019
/s/ Laura Black Laura Black	Director	March 8, 2019
/s/ John Chenault John Chenault	Director	March 8, 2019
/s/ John Kispert John Kispert	Director	March 8, 2019
/s/ Marc Haugen Marc Haugen	Director	March 8, 2019
/s/ Andrew Kowal Andrew Kowal	Director	March 8, 2019
/s/ Iain MacKenzie Iain MacKenzie	Director	March 8, 2019

Exhibit 10.9

ICHOR HOLDINGS, LTD
SELECT SEVERANCE PLAN

INTRODUCTION

The purpose of the Plan is to enable the Company to offer certain protections to Participants if their employment or service with the Employer is terminated under the circumstances described herein.

The Plan shall apply to Participants employed by or providing service to an Employer on or after the Effective Date and shall not apply to Participants who terminated employment or service with an Employer prior to the Effective Date.

Unless otherwise expressly provided in the Plan or unless otherwise agreed to in writing between the Company or an Affiliate and a Participant on or after the date hereof, Participants covered by the Plan shall not be eligible to participate in any other severance or termination plan, policy or practice of the Employer that would otherwise apply under the circumstances described herein. The Company intends that this Plan, with respect applicable Participants, qualify as and come within the various exceptions and exemptions under ERISA for an unfunded plan maintained primarily for a select group of management or highly compensated employees, and any ambiguities in this Plan shall be construed to effect that intent. This document shall constitute both the plan document and summary plan description and shall be distributed to Participants in this form. Capitalized terms and phrases used herein shall have the meanings ascribed thereto in Article I.

ARTICLE I
DEFINITIONS

For purposes of the Plan, capitalized terms and phrases used herein shall have the meanings ascribed in this Article.

1.1 "**Affiliate**" shall mean (a) any subsidiary corporation of the Company within the meaning of Section 424(f) of the Code, (b) any corporation, trade or business (including, without limitation, a partnership or limited liability company) which is directly or indirectly controlled 50% or more (whether by ownership of stock, assets or an equivalent ownership interest or voting interest) by the Company, or (c) any other entity which is designated as an Affiliate by the Board or the Committee.

1.2 "**Base Salary**" shall mean a Participant's annual base compensation rate for services paid by the Employer to the Participant at the time immediately prior to the Participant's termination of employment, as reflected in the Employer's payroll records, without regard to any reduction giving rise to Good Reason. Base Salary shall not include commissions, bonuses, overtime pay, incentive compensation, benefits paid under any qualified plan, any group medical, dental or other welfare benefit plan, non-cash compensation or any other additional compensation, but shall include amounts reduced pursuant to a Participant's salary reduction agreement under Section 125, 132(f)(4) or 401(k) of the Code, if any, or a nonqualified elective deferred compensation arrangement, if any, to the extent that in each such case the reduction is to base salary.

1.3 "**Board**" shall mean the Board of Directors of the Company.

1.4 "**Bonus**" shall mean the Participant's annual target cash performance bonus opportunity relating to the fiscal year in which a Change in Control shall occur, as determined under an agreement between the Participant and the Employer, or under any written bonus plan, program or arrangement approved by the Board or the Committee, without regard to any reduction giving rise to Good Reason. Bonus shall not include any other bonus to be paid upon completion of any specified project or upon the occurrence of a specified event, including, without limitation, a Change in Control.

1.5 "**Cause**" means the following: (a) in the case where there is no employment agreement or similar agreement in effect between the Company or an Affiliate and the Participant at the time of the Participant's Separation from Service, (or where there is such an agreement but it does not define "cause" (or words of like import)), termination due to a Participant's insubordination, dishonesty, fraud, incompetence, moral turpitude, willful misconduct, refusal to perform the Participant's duties or responsibilities for any reason other than illness or incapacity or materially unsatisfactory performance of the Participant's duties for the Company or an Affiliate, as determined by the Board in its good faith discretion; or (b) in the case where there is an employment agreement or similar agreement in effect between the Company or an Affiliate and the Participant at the time of the Participant's Separation from Service that defines "cause" (or words of like import), "cause" as defined under such agreement; provided, however, that with regard to any agreement under which the definition of "cause" only applies on occurrence of a Change in Control, such definition of "cause" shall not apply until a Change in Control actually takes place and then only with regard to a termination thereafter. Termination of the Participant for Cause shall be made by delivery to the Participant of a copy of a resolution duly adopted by the affirmative vote of not less than a two-thirds super majority of the Board at a meeting of the Board called and held for that purpose (after 10 days prior written notice to the Participant and a reasonable opportunity for the Participant to cure such conditions constituting Cause in all material respects, if curable, and to be heard before the Board prior to such vote) finding that in the good faith judgment of the Board, the Participant was guilty of conduct set forth in any of clauses (a) and (b) above and specifying the particulars thereof.

1.6 "**Change in Control**" shall mean the consummation of any of the following events: (a) any "person," as such term is used in Sections 13(d) and 14(d) of the Exchange Act, or group of "persons" (acting in concert), (other than the Company, any trustee or other fiduciary holding securities under any employee benefit plan of the Company, or any company owned, directly or indirectly, by the shareholders of the Company in substantially the same proportions as their ownership of equity interests of the Company), becoming the beneficial owner (as defined in Rule 13d-3 under the Exchange Act), directly or indirectly, of securities of the Company representing 50% or more of the combined voting power of the Company's then outstanding securities; (b) a merger or consolidation of the Company with any other operating corporation (or other operating entity) or its Affiliate, other than a merger or consolidation that would result in the voting securities of the Company outstanding immediately prior thereto continuing to represent (either by remaining outstanding or by being converted into voting securities of the surviving entity) 60% or more of the combined voting power of the voting securities of the Company or such surviving entity outstanding immediately after such merger or consolidation; provided, however, that a merger or consolidation effected to implement a recapitalization of the Company (or similar transaction) in which no Person (other than those covered by the exceptions in Section 1.6(a)) acquires more than 40% of the combined voting power of the Company's then outstanding securities shall not constitute a Change in Control of the Company; or (d) a complete liquidation or dissolution of the Company or the consummation of a sale or disposition by the Company of all or substantially all of the Company's assets other than the sale or disposition of all or substantially all of the assets of the Company to a person or persons who beneficially own, directly or indirectly, 50% or more of the combined voting power of the outstanding voting securities of the Company at the time of the sale.

Notwithstanding anything herein to the contrary and except with respect to a Change in Control event described in Section 1.6(b), a Change in Control shall be deemed to have occurred under this Section 1.6 solely upon the occurrence of the closing of the transaction giving rise to the Change in Control event. Notwithstanding anything herein to the contrary, none of the foregoing events shall be deemed to be a "Change in Control" unless such event constitutes a "change in control event" within the meaning of Code Section 409A.

1.7 "**Change in Control Related Termination**" means a Pre-Change in Control Termination or a Post-Change in Control Termination, as applicable.

1.8 "**COBRA**" shall mean the Consolidated Omnibus Budget Reconciliation Act of 1985, as amended.

1.9 "**Code**" shall mean the Internal Revenue Code of 1986, as amended.

1.10 "**Code Section 409A**" shall mean Section 409A of the Code together with the treasury regulations and other official guidance promulgated thereunder.

1.11 "**Committee**" shall mean the Compensation, Nominating and Corporate Governance Committee of the Board or such other committee appointed by the Board from time to time to administer the Plan.

1.12 "**Company**" shall mean Ichor Holdings, Ltd. and any successor as provided in Article VI hereof.

1.13 "**Continuation Period**" shall mean a period commencing on the date of a Participant's Separation from Service (or the date of the Change in Control in the event of a Pre-Change in Control Termination as a result of a Participant's resignation for Good Reason) until the earliest of:

(a) solely in the event of a Non-Change in Control Termination, the expiration of the period during which the Participant is receiving Severance Payments;

(b) solely in the Event of a Change in Control Related Termination, twelve (12) months (or, twenty-four (24) months with respect to a Participant with the title "Chief Executive Officer" who experiences a Change in Control Related Termination) from such date;

(c) the date the Participant becomes eligible for coverage under the health insurance plan of a subsequent employer; and

(d) the date the Participant or the Participant's eligible dependents, as the case may be, cease to be eligible under COBRA.

1.14 "**Continued Health Coverage**" shall mean the benefit set forth in Section 2.2(b) of the Plan.

1.15 "**Delay Period**" shall mean the period commencing on the date the Participant incurs a Separation from Service from the Employer until the earlier of (a) the six (6)-month anniversary of the date of such Separation from Service and (b) the date of the Participant's death.

1.16 "**Director**" shall mean a non-employee member of the Board.

1.17 "**Director Event**" shall mean, with respect to a Director, the consummation of a Change in Control.

1.18 "**Disability**" shall mean a Participant's disability that qualifies under the Employer's long-term disability plan without regard to any waiting periods set forth in such plan.

1.19 "**Effective Date**" shall mean March 6, 2019.

1.20 "**Eligible Employee**" shall mean any executive-level employee of the Employer subject to Section 16 of the Exchange Act, or otherwise designated in writing by the Committee to participate in the Plan.

1.21 "**Employer**" shall mean the Company and any Affiliate.

1.22 "**Equity Vesting**" shall mean the benefit set forth in Section 2.2(b) of the Plan.

1.23 "**ERISA**" shall mean the Employee Retirement Income Security Act of 1974, as amended.

1.24 "**Exchange Act**" shall mean the Securities Exchange Act of 1934, as amended.

1.25 "**Good Reason**" shall mean the occurrence of any of the following events, without the Participant's express written consent, provided the Participant gives notice to the Employer of the Good Reason event within thirty (30) days after the Participant has knowledge of the Good Reason event and such events are not fully corrected in all material respects by the Employer within thirty (30) days following receipt of the Participant's written notification: (a) a material diminution in the nature or scope of the Participant's responsibilities, duties or authority (except in connection with the termination of the Participant's employment for Cause or due to Disability, or temporarily as a result of the Participant's illness or other absence); (b) the Company's material breach of any employment agreement or similar agreement to which the Company and Participant are parties; (c) the Company's relocation of its principal offices more than fifty (50) miles from the prior location; (d) a reduction in the Participant's Base Salary or target Bonus other than, for both Base Salary and target Bonus individually, a temporary reduction lasting not more than twelve (12) continuous months of not more than twenty percent (20%) that also is applied to substantially all other executive officers of the Company; or (e) the failure of any successor to the Company to assume the Plan.

1.26 "**Non-Change in Control Termination**" shall mean a termination event described in Section 2.1(a)(i) of the Plan.

1.27 "**Participant**" shall mean any Eligible Employee or Director who is eligible to receive Severance Benefits under the Plan.

1.28 "**Plan**" shall mean the Ichor Holdings, Ltd. Select Severance Plan.

1.29 "**Post-Change in Control Termination**" shall mean a termination event described in Section 2.1(a)(ii) of the Plan.

1.30 "**Pre-Change in Control Termination**" shall mean a termination event described in Section 2.l(a)(ii) of the Plan.

1.31 "**Pro-Rata Bonus**" shall mean the payment set forth in Section 2.2(d) of the Plan.

1.32 "**Separation from Service**" shall mean a Participant's termination or significant reduction of services with the Employer, provided that such termination or reduction constitutes a separation from service within the meaning of Code Section 409A and the guidance issued thereunder. All references in the Plan to a "**termination,**" "**termination of employment**" or like terms shall mean Separation from Service.

1.33 "**Severance Benefits**" shall mean, as applicable, the Severance Payment, the Continued Health Coverage, the Equity Vesting and the Pro-Rata Bonus.

1.34 "**Severance Payment**" shall mean the payments set forth in Section 2.2(a) of the Plan.

1.35 "**Specified Employee**" shall mean a Participant who, as of the date of his or her Separation from Service, is deemed to be a "specified employee" within the meaning of that term under Section 409A(a)(2)(B) of the Code and using the identification methodology selected by the Employer from time to time in accordance therewith, or if none, the default methodology set forth therein.

ARTICLE II
SEVERANCE BENEFITS

Eligibility for Severance Benefits.

(a) Qualifying Event for an Eligible Employee or Director.

(i) ***Non-Change in Control Termination***. If, at any time prior to a Change in Control, the employment of a Participant is terminated by the Employer without Cause (and solely with respect to the Chief Executive Officer, upon resignation for Good Reason) (a "**Non-Change in Control Termination**"), then the Employer shall pay or provide the Participant with the Severance Payment, the Continued Health Coverage, and the Pro-Rata Bonus pursuant to the terms set forth herein.

(ii) ***Change in Control Related Termination***. If, during the ninety (90) day period prior to the date of the Company's consummation of a Change in Control (a "**Pre-Change in Control Termination**") or the period commencing on the date of a Change in Control and ending twelve (12) months thereafter (a "**Post-Change in Control Termination**"), the employment of a Participant is terminated by the Employer without Cause or by the Participant for Good Reason, then the Employer shall pay or provide the Participant with the Severance Payment, the Continued Health Coverage, the Equity Vesting, and the Pro-Rata Bonus pursuant to the terms set forth herein, and in the event of a Pre-Change in Control Termination, the foregoing Severance Benefits shall be in lieu of any Severance Benefits the Participant is entitled to under Section 2.1(a)(i).

(iii) ***Director Event***. Upon the occurrence of a Director Event, Directors shall be entitled to severance pursuant to the terms set forth herein.

(b) Non-Qualifying Events for an Eligible Employee. A Participant shall not be entitled to Severance Benefits under the Plan if the Participant's employment is terminated (i) by the Employer for Cause, (ii) by a Participant for any reason, except with respect to a resignation for Good Reason during the periods set forth in this Section 2.1, or (iii) on account of the Participant's death or Disability.

2.2 **Severance Benefits**. In the event that a Participant becomes entitled to benefits pursuant to Section 2.1(a) hereof, the Employer shall pay or provide the Participant, in addition to any accrued but unpaid compensation (whether in the form of Participant's earned Base Salary, Bonus or otherwise), with the applicable Severance Benefits as follows:

(a) Severance Payment for an Eligible Employee. Subject to the provisions of Sections 2.3 through 2.8, the Employer shall pay to the Participant the following:

(i) ***Non-Change in Control Termination***. In the event of a Non-Change in Control Termination, the Employer shall pay the Participant an amount in cash equal to one-twelfth (1/12) of the Participant's Base Salary, payable monthly in accordance with the Company's normal payroll practices for a period of nine (9) months (but for the Chief Executive Officer, twelve (12) months) following the Participant's Separation from Service, with the first payment thereof paid on the sixtieth (60th) day following the date of the Participant's Separation from Service (or, if earlier and to the extent permitted by Code Section 409A, as soon as practicable following the effective date of the release described in Section 2.5), which first payment shall include any amounts that would have been otherwise payable to the Participant during such period. Notwithstanding the foregoing or anything in the Plan to the contrary, to the extent required by Code Section 409A, the payment of the Severance Payments under this Section 2.2(a)(i) shall be subject to the Delay Period as provided in Section 7.8(b) hereof.

(ii) ***Change in Control Related Termination***. In the event of a Change in Control Related Termination, the Employer shall pay the Participant a lump sum amount in cash equal to the sum of Participant's Base Salary plus Bonus (but for the Chief Executive Officer, such sum multiplied by two (2)). Notwithstanding the foregoing or anything in the Plan to the contrary, (A) to the extent required by Code Section 409A, the payment of the Severance Payments under this Section 2.2(a)(ii) shall be subject to the Delay Period as provided in Section 7.8(b) hereof, and (B) to the extent Code Section 409A would not permit a lump sum payment pursuant to this Section 2.2(a)(ii) with respect to amounts set forth in Section 2.2(a)(i), such amounts shall be paid pursuant to the schedule set forth in Section 2.2(a)(i).

(b) Continued Health Coverage for an Eligible Employee. Subject to the provisions of Sections 2.3 through 2.8 and a Participant's timely election pursuant to COBRA, during the Continuation Period the Employer shall pay the employer-portion of continued coverage pursuant to COBRA, for the Participant and the Participant's eligible dependents, under the Employer's group health plans in which the Participant participated immediately prior to the date of termination of the Participant's employment or materially equivalent plans maintained by the Company in replacement thereof. Following the Continuation Period, the Participant (or, if applicable, the Participant's qualified beneficiaries under COBRA) shall be entitled to such continued coverage for the remainder of the COBRA period, if any, on a fully self-paid basis to the extent eligible under COBRA. In the event Continued Health Coverage cannot be provided to the Participant during the Continuation Period without subjecting the Company or the Participant to penalties under applicable law, the Company may alter the manner in which Continued Health Coverage is provided; provided, the after-tax cost to the Participant of such benefits shall not be greater than the cost applicable to similarly situated executives who remain actively employed by the Company.

(c) Accelerated Vesting of Equity Awards . The Equity Vesting under this Section 2.2(c) shall apply only in the event of a Change in Control Related Termination or a Director Event. Subject to the provisions of Sections 2.3 and 2.4 and Sections 2.6 through 2.8, to the extent not vested immediately prior to a Change in Control, all stock based awards granted to the Participant prior to the Change in Control under the Company's equity plans, each as amended, including, but not limited to, the Company's 2016 Omnibus Incentive Plan and 2012 Equity Incentive Plan, or any predecessor or successor plan(s) thereto, that are outstanding as of the date of the Change in Control (including, but not limited to, stock options and shares of restricted stock), or, in the event such stock based awards are not assumed or substituted by the successor in connection with such Change in Control, outstanding immediately prior to the date of the Change in Control, shall become fully vested as of the date of the Change in Control Related Termination. Any stock option, stock appreciation right or similar award that provides for a Participant-elected exercise shall become fully exercisable and will remain exercisable for the applicable period following termination as specified in the applicable equity plan and/or the applicable award agreement. In the case of restricted stock or similar awards that are not subject to a Participant-elected exercise, the Company shall remove any restrictions (other than restrictions required by Federal securities law) or conditions in respect of such award as of the date of the Participant's Change in Control Related Termination. For the avoidance of doubt, this Section 2.2(b) shall apply to any equity awards that, in connection with a Change in Control, (1) are granted as replacement of the equity awards held by the Participant immediately prior to the Change in Control, and (2) are outstanding immediately prior to the Change in Control, but are not assumed or substituted by the successor in connection with such Change in Control. Subject to the provisions of Sections 2.3 and 2.4 and Sections 2.6 through 2.8, to the extent not vested immediately prior to a Change in Control, all stock based awards granted to a Director shall become fully vested as of the date of a Director Event.

(d) Pro-Rata Bonus for an Eligible Employee. The Pro-Rata Bonus under this Section 2.2(d) shall apply in the event of either a Non-Change in Control Termination or a Change in Control Related Termination. Subject to the provisions of Sections 2.3 through 2.8, the Participant shall be entitled to receive a pro rata portion (based on the completed number of months of employment during the applicable performance period) of the Participant's Bonus for the performance period in which the Participant's Separation from Service occurs, calculated based on actual results for such performance period, payable at the time that the performance bonus would otherwise be paid. For the avoidance of doubt, a Pro-Rata Bonus shall not be based on any bonus to be paid upon completion of any specified project or upon occurrence of a specified event, including, without limitation, a Change in Control.

2.3 **Prior Agreements**. The Severance Benefits under this Plan shall supersede and be in lieu of any severance benefits and/or payments provided under the Plan as in effect prior to the Effective Date or under any other agreements, arrangements or severance plans by and between the Participant and the Employer, except to the extent any other such agreements, arrangements or severance plans entered into after the Effective Date specifically state that they supersede this Plan, or to the extent a Participant's employment or similar agreement provides for severance benefits that, in the aggregate, are more favorable to the Participant (in which case, such greater benefits will be paid under this Plan).

2.4 **No Duty to Mitigate/Set-off**. No Participant entitled to receive Severance Benefits hereunder shall be required to seek other employment or to attempt in any way to reduce any amounts payable to the Participant by the Company or Employer pursuant to the Plan, and there shall be no offset against any amounts due to the Participant under the Plan on account of any remuneration attributable to any subsequent employment that the Participant may obtain or otherwise. The amounts payable hereunder shall not be subject to setoff, counterclaim, recoupment, defense or other right which the Employer may have against the Participant. In the event of the Participant's breach of any provision hereunder, including without limitation, Sections 2.5 (other than as it applies to a release of claims under the Age Discrimination in Employment Act, as amended), 2.7 and 2.8 hereof, the Company shall be entitled to recover any payments previously made to the Participant hereunder. Severance Benefits shall be reduced (offset) by any amounts payable under any statutory entitlement (including notice of termination, termination pay and/or severance pay) of the Participant upon a termination of employment, including, without limitation, any payments related to an actual or potential liability under the Worker Adjustment and Retraining Notification Act (WARN) or similar state or local law.

2.5 **Release Required**. Any Severance Benefits (other than the Equity Vesting) payable or to be provided pursuant to the Plan shall be conditioned upon the Participant's execution and non-revocation of a release substantially in the form attached as Appendix A hereto (with such changes thereon as are legally necessary at the time of execution to make it enforceable, including, but not limited to the addition of any federal, state or local laws) (the "**Release**"). The Company shall provide the release to the Participant within seven (7) days following the date of the Participant's Separation from Service. Any release must be executed and become non-revocable during the period set forth in the release, but in any event no later than sixty (60) days following Participant's

Separation from Service.

2.6 **Code Section 280G**.

(a) In the event it is determined pursuant to clause (b) below, that part or all of the consideration, compensation or benefits to be paid to the Participant under the Plan in connection with the Participant's termination of employment following a Change in Control or under any other plan, arrangement or agreement in connection therewith (each a "**Payment**"), constitutes a "parachute payment" (or payments) under Section 280G(b)(2) of the Code, then, if the aggregate present value of such parachute payments (the "**Parachute Amount**") exceeds 2.99 times the Participant's "base amount," as defined in Section 280G(b)(3) of the Code (the "**Participant Base Amount**") and would be subject to the excise tax imposed by Section 4999 of the Code (the "**Excise Tax**"), the amounts constituting "parachute payments" which would otherwise be payable to or for the benefit of the Participant shall be reduced to the extent necessary so that the Parachute Amount is equal to 2.99 times the Participant Base Amount; provided, however, that the foregoing reduction shall be made only if and to the extent that such reduction would result in an increase in the aggregate Payment to be provided, determined on a net after-tax basis (taking into account the Excise Tax imposed, any tax imposed by any comparable provision of state law, and any applicable federal, state and local income taxes).

(b) Any determination that a Payment constitutes a parachute payment and any calculation described in this Section 2.6 ("**determination**") shall be made by the independent public accountants for the Company, and may, at the Company's election, be made prior to termination of the Participant's employment where the Company determines that a Change in Control is imminent. Such determination shall be furnished in writing no later than thirty (30) days following the date of the Change in Control by the accountants to the Participant. If the Participant does not agree with such determination, he may give notice to the Company within ten (10) days of receipt of the determination from the accountants and, within fifteen (15) days thereafter, accountants of the Participant's choice must deliver to the Company their determination that in their judgment complies with the Code. If the two accountants cannot agree upon the amount to be paid to the Participant pursuant to this Section 2.6 within ten days of the delivery of the statement of the Participant's accountants to the Company, the two accountants shall choose a third accountant who shall deliver their determination of the appropriate amount to be paid to the Participant pursuant to this Section 2.6, which determination shall be final. If the final determination provides for the payment of a greater amount than that proposed by the accountants of the Company, then the Company shall pay all of the Participant's costs incurred in contesting such determination and all other costs incurred by the Company with respect to such determination. However, if the determination of the accountants of the Company is supported by the third accountant, the Participant shall pay all reasonable costs incurred by both the Company and the Participant with respect to the determination.

(c) If the final determination made pursuant to clause (b) above results in a reduction of the Payments that would otherwise be paid to the Participant except for the application of Section 2.6(a), the Equity Vesting shall be eliminated or reduced to the extent necessary in order to not exceed the limitation under Section 2.6(a), then, to the extent necessary pursuant to Section 2.6(a), the Severance Payment shall be reduced, and, finally, to the extent necessary pursuant to Section 2.6(a), the Continued Health Coverage shall be reduced. Within ten days following such determination, the Company shall pay to or distribute to or for the benefit of the Participant such amounts as are then due to the Participant under the Plan and shall promptly pay to or distribute to or for the benefit of the Participant in the future such amounts as become due to the Participant under the Plan.

(d) As a result of the uncertainty in the application of Section 280G of the Code at the time of a determination hereunder, it is possible that payments will be made by the Company which should not have been made under Section 2.6(a) (an "**Overpayment**") or that additional payments which are not made by the Company pursuant to Section 2.6(a) above should have been made (an "**Underpayment**"). In the event that there is a final determination by the Internal Revenue Service, or a final determination by a court of competent jurisdiction, that an Overpayment has been made, any such Overpayment shall be treated for all purposes as a loan to the Participant to the extent permitted by law, which the Participant shall repay to the Company together with interest at the applicable Federal rate provided for in Section 7872(f)(2) of the Code. Nothing in this Section 2.6 is intended to violate the Sarbanes-Oxley Act of 2002 and to the extent that any advance or repayment obligation hereunder would do so, such obligation shall be modified so as to make the advance a nonrefundable payment to the Participant and the repayment obligation null and void to the extent required by such Act. In the event that there is a final determination by the Internal Revenue Service, a final determination by a court of competent jurisdiction or a change in the provisions of the Code or regulations pursuant to which an Underpayment arises under the Plan, any such Underpayment shall be promptly paid by the Company to or for the benefit of the Participant, together with interest at the applicable Federal rate provided for in Section 7872(f)(2) of the Code.

2.7 **Restrictive Covenants**. As a condition to receiving Severance Benefits (other than the Equity Vesting), the Participant shall be subject to the restrictive covenants described in the Release. Upon the Participant's timely execution and non-revocation of the Release, the restrictive covenants contained therein shall supersede any restrictive covenants contained in any agreement or arrangement between the Employer and the Participant, including any employment agreement.

2.8 **Cooperation**. By accepting the Severance Benefits under the Plan, subject to the Participant's other commitments, the Participant agrees to be reasonably available to cooperate (but only truthfully) with the Employer and the Company and provide information as to matters which the Participant was personally involved, or has information on, during the Participant's employment with the Employer and which are or become the subject of litigation or other dispute.

ARTICLE III
UNFUNDED PLAN

3.1 **Unfunded Status**. The Plan shall be "unfunded" for the purposes of ERISA and the Code, and Severance Payments shall be paid out of the general assets of the Employer as and when Severance Payments are payable under the Plan. All Participants shall be solely unsecured general creditors of the Company and the Employer. If the Company decides in its sole discretion to establish any advance accrued reserve on its books against the future expense of the Severance Payments payable hereunder, or if the Company decides in its sole discretion to fund a trust under the Plan, such reserve or trust shall not under any circumstances be deemed to be an asset of the Plan.

ARTICLE IV
ADMINISTRATION OF THE PLAN

4.1 **Plan Administrator**. The general administration of the Plan on behalf of the Company (as plan administrator under Section 3(16)(A) of ERISA) shall be placed with the Committee.

4.2 **Reimbursement of Expenses of Plan Committee**. The Company may, in its sole discretion, pay or reimburse the members of the Committee for all reasonable expenses incurred in connection with their duties hereunder, including, without limitation, expenses of outside legal counsel.

4.3 **Action by the Plan Committee**. Decisions of the Committee shall be made by a majority of its members attending a meeting at which a quorum is present (which meeting may be held telephonically), or by written action in accordance with applicable law. Subject to the terms of the Plan and provided that the Committee acts in good faith, the Committee shall have complete authority to determine a Participant's participation and Severance Benefits under the Plan, to interpret and construe the provisions of the Plan, and to make decisions in all disputes involving the rights of any person interested in the Plan.

4.4 **Delegation of Authority**. Subject to the limitations of applicable law, the Committee may delegate any and all of its powers and responsibilities hereunder to other persons by formal resolution filed with and accepted by the Board. Any such delegation shall not be effective until it is accepted by the Board and the persons designated, and may be rescinded at any time by written notice from the Committee to the person to whom the delegation is made.

4.5 **Retention of Professional Assistance**. The Committee may employ such legal counsel, accountants and other persons as may be required in carrying out its work in connection with the Plan.

4.6 **Accounts and Records**. The Committee shall maintain such accounts and records regarding the fiscal and other transactions of the Plan and such other data as may be required to carry out its functions under the Plan and to comply with all applicable laws.

4.7 **Indemnification**. The Committee, its members and any person designated pursuant to Section 4.4 above shall not be liable for any action or determination made in good faith with respect to the Plan. The Employer shall, to the fullest extent permitted by law, indemnify and hold harmless each member of the Committee and each director, officer and employee of the Employer, and any person designated above, for liabilities or expenses they and each of them incur in carrying out their respective duties under the Plan, other than for any liabilities or expenses arising out of such individual's willful misconduct or fraud.

ARTICLE V
AMENDMENT AND TERMINATION

5.1 **Amendment and Termination**. The Company reserves the right to amend or terminate, in whole or in part, any or all of the provisions of the Plan by action of the Board (or a duly authorized committee thereof) at any time, provided that in no event shall any amendment, except for amendments pursuant to Section 7.8(a), reducing the Severance Benefits provided hereunder or any Plan termination be effective prior to the later of (A) the third (3rd) anniversary of the Effective Date and (B) one year after the Company provides written notice to the Participant that it wishes to amend or terminate this Plan and the nature of the amendments, if applicable, and further provided, that the Company shall not amend or terminate the Plan at any time after (i) the occurrence of a Change in Control or (ii) the date the Company enters into a definitive agreement which, if consummated, would result in a Change in Control, unless the potential Change in Control is abandoned (as publicly announced by the Company), in either case until two (2) years after the occurrence of a Change in Control, provided that all Severance Benefits under the Plan have been paid.

ARTICLE VI
SUCCESSORS

For purposes of the Plan, the Company shall include any and all successors or assignees, whether direct or indirect, by purchase, merger, consolidation or otherwise, to all or substantially all the business or assets of the Company, and such successors and assignees shall perform the Company's obligations under the Plan, in the same manner and to the same extent that the Company, would be required to perform if no such succession or assignment had taken place. In the event the surviving corporation in any transaction to which the Company is a party is a subsidiary of another corporation, then the ultimate parent corporation of such surviving corporation shall cause the surviving corporation to perform the Plan in the same manner and to the same extent that the Company would be required to perform if no such succession or assignment had taken place. In such event, the term "Company" as used in the Plan, shall mean the Company, as hereinbefore defined and any successor or assignee (including the ultimate parent corporation) to the business or assets of the Company, which by reason hereof becomes bound by the terms and provisions of the Plan.

ARTICLE VII
MISCELLANEOUS

7.1 **Minors and Incompetents**. If the Committee shall find that any person to whom Severance Benefits are payable under the Plan is unable to care for his or her affairs because of illness or accident, or is a minor, any Severance Benefits due (unless a prior claim therefore shall have been made by a duly appointed guardian, committee or other legal representative) may be paid to the spouse, child, parent, or brother or sister, or to any person deemed by the Committee to have incurred expense for such person otherwise entitled to the Severance Benefits, in such manner and proportions as the Committee may determine in its sole discretion. Any such Severance Benefits shall be a complete discharge of the liabilities of the Company, the Employer, the Committee, and the Board under the Plan.

7.2 **Limitation of Rights**. Nothing contained herein shall be construed as conferring upon a Participant the right to continue in the employ of the Employer as an employee in any other capacity or to interfere with the Employer's right to discharge him or her at any time for any reason whatsoever.

7.3 **Payment Not Salary**. Any Severance Benefits payable under the Plan shall not be deemed salary or other compensation to the Participant for the purposes of computing benefits to which he or she may be entitled under any pension plan or other arrangement of the Employer maintained for the benefit of its employees, unless such plan or arrangement provides otherwise.

7.4 **Severability**. In case any provision of the Plan shall be illegal or invalid for any reason, said illegality or invalidity shall not affect the remaining parts hereof, but the Plan shall be construed and enforced as if such illegal and invalid provision never existed.

7.5 **Withholding**. The Company and/or the Employer shall have the right to make such provisions as it deems necessary or appropriate to satisfy any obligations it may have to withhold federal, state or local income or other taxes incurred by reason of payments pursuant to the Plan. In lieu thereof, the Company and/or the Employer shall have the right to withhold the amounts of such taxes from any other sums due or to become due from the Company and/or the Employer to the Participant upon such terms and conditions as the Committee may prescribe.

7.6 **Non-Alienation of Benefits**. The Severance Benefits payable under the Plan shall not be subject to alienation, transfer, assignment, garnishment, execution or levy of any kind, and any attempt to cause any Severance Benefits to be so subjected shall not be recognized.

7.7 **Governing Law**. To the extent legally required, the Code and ERISA shall govern the Plan and, if any provision hereof is in violation of any applicable requirement thereof, the Company reserves the right to retroactively amend the Plan to comply therewith. To the extent not governed by the Code and ERISA, the Plan shall be governed by the laws of the State of California, without reference to rules relating to conflicts of law.

7.8 **Code Section 409A**.

(a) General. Although the Employer makes no guarantee with respect to the tax treatment of payments hereunder and shall not be responsible in any event with regard to non-compliance with Code Section 409A, the Plan is intended to either comply with, or be exempt from, the requirements of Code Section 409A. To the extent that the Plan is not exempt from the requirements of Code Section 409A, the Plan is intended to comply with the requirements of Code Section 409A and shall be limited, construed and interpreted in accordance with such intent. Accordingly, the Company reserves the right to amend the provisions of the Plan at any time and in any manner without the consent of Participants solely to comply with the requirements of Code Section 409A and to avoid the imposition of an excise tax under Code Section 409A on any payment to be made hereunder, provided that there is no reduction in the Severance Benefits hereunder. Notwithstanding the foregoing, in no event whatsoever shall the Employer be liable for any additional tax, interest or penalty that may be imposed on a Participant by Code Section 409A or any damages for failing to comply with Code Section 409A.

(b) Separation from Service; Delay Period for Specified Employees. A termination of employment shall not be deemed to have occurred for purposes of any provision of the Plan providing for the payment of any amounts or benefits upon or following a termination of employment unless such termination is also a Separation from Service. If a Participant is deemed on the date of termination to be a Specified Employee, then with regard to any payment that is specified as subject to this Section, such payment shall not be made prior to the expiration of the Delay Period. All payments delayed pursuant to this Section 7.8(b) (whether they would have otherwise been payable in a single lump sum or in installments in the absence of such delay) shall be paid to the Participant in a single lump sum on the first Company payroll date on or following the first day following the expiration of the Delay Period, and any remaining payments and benefits due under the Plan shall be paid or provided in accordance with the normal payment dates specified for them herein.

(c) Separate Payments and No Participant Discretion. For purposes of Code Section 409A, the Participant's right to receive any installment payments pursuant to this Plan shall be treated as a right to receive a series of separate and distinct payments. Whenever a payment under this Agreement specifies a payment period with reference to a number of days (e.g., "payment shall be made within thirty (30) days following the date of termination"), the actual date of payment within the specified period shall be within the sole discretion of the Employer.

7.9 **Non-Exclusivity**. The adoption of the Plan by the Company shall not be construed as creating any limitations on the power of the Company to adopt such other supplemental retirement income arrangements as it deems desirable, and such arrangements may be either generally applicable or limited in application.

7.10 **Non-Employment**. The Plan is not an agreement of employment and it shall not grant the Participant any rights of employment.

7.11 **Headings and Captions**. The headings and captions herein are provided for reference and convenience only. They shall not be considered part of the Plan and shall not be employed in the construction of the Plan.

7.12 **Gender and Number**. Whenever used in the Plan, the masculine shall be deemed to include the feminine and the singular shall be deemed to include the plural, unless the context clearly indicates otherwise.

7.13 **Communications**. All announcements, notices and other communications regarding the Plan will be made by the Company and/or the Employer in writing.

7.14 **Legal Fees**. This Section 7.14 shall apply only in the event of a Change in Control Related Termination. In the event that a Participant substantially prevails in a litigation between the Participant and the Company arising in connection with such Participant's attempt to obtain or enforce any right or benefit provided by the Plan, the Company agrees to pay the reasonable attorney's fees and other legal expenses incurred by such Participant in pursuing such litigation, including a reasonable rate of interest for delayed payment.

ARTICLE VIII
WHAT ELSE A PARTICIPANT NEEDS TO KNOW ABOUT THE PLAN

8.1 **Claims Procedure**. Any claim by a Participant with respect to eligibility, participation, contributions, benefits or other aspects of the operation of the Plan shall be made in writing to a person designated by the Committee from time to time for such purpose. If the designated person receiving a claim believes, following consultation with the Chairman of the Committee, that the claim should be denied, he or she shall notify the Participant in writing of the denial of the claim within ninety (90) days after his or her receipt thereof. This period may be extended an additional ninety (90) days in special circumstances and, in such event, the Participant shall be notified in writing of the extension, the special circumstances requiring the extension of time and the date by which the Committee expects to make a determination with respect to the claim. If the extension is required due to the Participant's failure to submit information necessary to decide the claim, the period for making the determination will be tolled from the date on which the extension notice is sent until the date on which the Participant responds to the Plan's request for information.

If a claim is denied in whole or in part, or any adverse benefit determination is made with respect to the claim, the Participant will be provided with a written notice setting forth (a) the specific reason or reasons for the denial making reference to the pertinent provisions of the Plan or of Plan documents on which the denial is based, (b) a description of any additional material or information necessary to perfect or evaluate the claim, and explain why such material or information, if any, is necessary, and (c) inform the Participant of his or her right to request review of the decision.

The notice shall also provide an explanation of the Plan's claims review procedure and the time limits applicable to such procedure, as well as a statement of the Participant's right to bring a civil action under Section 502(a) of ERISA following an adverse benefit determination on review. If a Participant is not notified (of the denial or an extension) within ninety (90) days from the date the Participant notifies the Plan Administrator, the Participant may request a review of the application as if the claim had been denied.

A Participant may appeal the denial of a claim by submitting a written request for review to the Committee, within sixty (60) days after written notification of denial is received. Receipt of such denial shall be deemed to have occurred if the notice of denial is sent via first class mail to the Participant's last shown address on the books of the Employer. Such period may be extended by the Committee for good cause shown. The claim will then be reviewed by the Committee. In connection with this appeal, the Participant (or his or her duly authorized representative) may (a) be provided, upon written request and free of charge, with reasonable access to (and copies of) all documents, records, and other information relevant to the claim, and (b) submit to the Committee written comments, documents, records, and other information related to the claim. If the Committee deems it appropriate, it may hold a hearing as to a claim. If a hearing is held, the Participant shall be entitled to be represented by counsel.

The review by the Committee will take into account all comments, documents, records, and other information the Participant submits relating to the claim. The Committee will make a final written decision on a claim review, in most cases within sixty (60) days after receipt of a request for a review. In some cases, the claim may take more time to review, and an additional processing period of up to sixty (60) days may be required. If that happens, the Participant will receive a written notice of that fact, which will also indicate the special circumstances requiring the extension of time and the date by which the Committee expects to make a determination with respect to the claim. If the extension is required due to the Participant's failure to submit information necessary to decide the claim, the period for making the determination will be tolled from the date on which the extension notice is sent to the Participant until the date on which the Participant responds to the Plan's request for information.

The Committee's decision on the claim for review will be communicated to the Participant in writing. If an adverse benefit determination is made with respect to the claim, the notice will include: (a) the specific reason(s) for any adverse benefit determination, with references to the specific Plan provisions on which the determination is based; (b) a statement that the Participant is entitled to receive, upon request and free of charge, reasonable access to (and copies of) all documents, records and other information relevant to the claim; and (c) a statement of the Participant's right to bring a civil action under Section 502(a) of ERISA. A Participant may not start a lawsuit to obtain benefits until after he or she has requested a review and a final decision has been reached on review, or until the appropriate timeframe described above has elapsed since the Participant filed a request for review and the Participant has not received a final decision or notice that an extension will be necessary to reach a final decision. These procedures must be exhausted before a Participant (or any beneficiary) may bring a legal action seeking payment of benefits. In addition, no lawsuit may be started more than two years after the date on which the applicable appeal was denied. If there is no decision on appeal, no lawsuit may be started more than two years after the time when the Committee should have decided the appeal. The law also permits the Participant to pursue his or her remedies under Section 502(a) of ERISA without exhausting these appeal procedures if the Plan has failed to follow them.

APPENDIX A

AGREEMENT AND RELEASE

Ichor Holdings, LTD (the "Company") and [**name**] (the "Employee") agree to the terms and conditions set forth below:

1. Termination. Employee's employment with the Employer (as defined under the Ichor Holdings, LTD Executive Severance Plan (the "Severance Plan")) [**is**] [**was**] terminated as of [ ], 20[ ] (the "Termination Date"). Employee acknowledges that the Termination Date [**is**] [**was**] the termination date of **[his/her]** employment for purposes of participation in and coverage under all benefit plans and programs sponsored by or through the Employer. Employee acknowledges and agrees that the Employer shall not have any obligation to rehire Employee, nor shall the Employer have any obligation to consider **[him/her]** for employment, after the Termination Date. All capitalized terms used herein, unless defined otherwise herein, shall have the meaning set forth in the Severance Plan.

2. Severance Benefits. In exchange for the general release in paragraph 4 below and other promises contained herein, and in accordance with the terms of the Severance Plan, which Employee hereby acknowledges receiving, Employee will receive the applicable Severance Benefits under Section 2.2 of the Plan, paid or provided in accordance therewith.

3. Acknowledgment. Employee hereby agrees and acknowledges that the Severance Benefits exceed any payment, benefit or other thing of value to which Employee might otherwise be entitled under any policy, plan or procedure of the Employer, the Company or Affiliates or pursuant to any prior agreement or contract with the Employer, the Company or Affiliates.

4. Release. (a) In exchange for the Severance Benefits and other valuable consideration, Employee, for **[himself/herself]** and for [**his/her**] heirs, executors, administrators and assigns (referred to collectively as "Releasors"), forever releases and discharges the Employer and any and all of the Employer's parent companies, partners, subsidiaries, affiliates, successors and assigns and any and all of its and their past and/or present officers, directors, partners, agents, employees, representatives, counsel, employee benefit plans and their fiduciaries and administrators, successors and assigns (referred to collectively as the "Releasees"), from any and all claims, demands, causes of action, fees and liabilities of any kind whatsoever, whether known or unknown, which Releasors ever had, now have or may have against Releasees by reason of any actual or alleged act, omission, transaction, practice, conduct, occurrence or other matter up to and including the date Employee signs this Agreement and Release.

(b) Without limiting the generality of the foregoing, this Agreement and Release is intended to and shall release Releasees from any and all claims, whether known or unknown, that Releasors ever had, now have or may have against Releasees arising out of Employee's employment with the Employer or any of the Releasees, the terms and conditions of such employment and/or the termination of such employment, including but not limited to: (i) any claim under the Age Discrimination in Employment Act, as amended ("ADEA"), and/or the Older Workers Benefit Protection Act which laws prohibit discrimination on account of age; (ii) any claim under Title VII of the Civil Rights Act of 1964, as amended, which, among other things, prohibits discrimination/retaliation on account of race, color, religion, sex, and national origin; (iii) any claim under the Americans with Disabilities Act ("ADA") or Sections 503 and 504 of the Rehabilitation Act of 1973, each as amended; (iv) any claim under the Employee Retirement Income Security Act of 1974, as amended ("ERISA"): (v) any claim under the Family and Medical Leave Act; (vi) any claim or other action under the National Labor Relations Act, as amended; (vii) any claim under the Workers' Adjustment and Retraining Notification Act; (viii) any claim under [**State laws applicable to employee**] (ix) the Sarbanes-Oxley Act of 2002; (x) any other claim of discrimination, harassment or retaliation in employment (whether based on federal, state or local law, regulation, or decision; (xi) any other claim (whether based on federal, state or local law, statutory or decisional) arising out of the terms and conditions of Employee's employment with and termination from the Employer and/or the Released Parties; (xii) any claims for wrongful discharge, whistleblowing, constructive discharge, promissory estoppel, detrimental reliance, negligence, defamation, emotional distress, compensatory or punitive damages, and/or equitable relief; (xiii) any claims under federal, state, or local occupational safety and health laws or regulations, all as amended; and (xiv) any claim for attorneys' fees [**ADD ONLY FOR A CHANGE IN CONTROL RELATED TERMINATION:** , (other than claims for legal fees pursuant to Section 7.14 of the Severance Plan)], costs, disbursements and/or the like. By virtue of the foregoing, Employee agrees that [**he/she**] has waived any damages and other relief available to [**him/her**] (including, without limitation, money damages, equitable relief and reinstatement) under the claims waived in this paragraph 4; provided that nothing herein shall be a waiver of Employee's right to report violations of federal law or regulation or provide truthful information about this Agreement and Release or Releasees or, to cooperate with any investigation being conducted by any governmental agency, or making other disclosures that are protected under the whistleblower provisions of federal law or regulation. Notwithstanding anything herein to the contrary, the sole matters to which this Agreement of Release does not apply are: (A) claims to the Severance Benefits; (B) claims under the Consolidated Omnibus Budget Reconciliation Act of 1985, as amended; (C) claims arising after the date Employee signs this Agreement and Release; (D) claims relating to any rights of indemnification under the Employer's organizational documents or otherwise, (E) claims relating to any outstanding stock options or other equity-based award on the Termination Date [**ADD ONLY FOR A CHANGE IN CONTROL RELATED TERMINATION:** , including, without limitation, the Equity Vesting]; (F) claims to vested accrued benefits under the Employer's tax qualified retirement plans or non-qualified retirement plans in accordance with, and subject to, the terms and conditions of such plans and applicable law; or (G) Employee's right to seek enforcement of the terms of the Severance Plan [**ADD ONLY FOR A CHANGE IN CONTROL RELATED TERMINATION:** , including, but not limited to, claims for legal fees pursuant to Section 7.14 of the Severance Plan], Employee acknowledges that Employee has been informed that Employee might have specific rights and/or claims under the ADEA. Employee specifically waives such rights and/or claims under the ADEA to the extent such rights and/or claims arose on or prior to the date this Agreement of Release is executed by Employee.

(d) Non-Disparagement: Cooperation in Certain Other Legal Proceedings. Employee agrees that at no time will [**he/she**], in public or private, engage in any form of conduct or make any statements or representations that deprecate, impugn, disparage or otherwise impair the reputation, goodwill or commercial interests of, or make any remarks that would tend to or be construed to tend to defame, the Releasees, nor shall the Employee assist any other person, firm or company in so doing. Nothing in this Agreement and Release shall prohibit or restrict Employee from (i) making any disclosure of information, as required by law, in a proceeding or lawsuit in which the Employer is a party, or additionally in any other civil proceeding or lawsuit upon ten (10) business days prior written notice to the Employer; (ii) providing information to, or testifying or otherwise assisting in an investigation or proceeding brought by any federal regulatory or law enforcement agency or legislative body or the Employer's designated legal, compliance, or human resources officers; (iii) filing, testifying, participating or otherwise assisting in a proceeding relating to an alleged violation of any federal, state or municipal law relating to fraud or any rule or regulation of the Securities and Exchange Commission; (iv) challenging the validity of this Agreement and Release as it applies to a release of claims under ADEA; or (v) accepting any U.S. Securities and Exchange Commission awards. In addition, nothing in this Agreement and Release prohibits or restricts Employer or Employee from initiating communications with, or responding to any inquiry from, any regulatory or supervisory authority regarding any good faith concerns about possible violations of law or regulation. Pursuant to 18 U.S.C. § 1833(b), Employee will not be held criminally or civilly liable under any Federal or State trade secret law for the disclosure of a trade secret of the Employer or its subsidiaries or affiliates that (A) is made (x) in confidence to a Federal, State, or local government official, either directly or indirectly, or to Employee's attorney and (y) solely for the purpose of reporting or investigating a suspected violation of law; or (B) is made in a complaint or other document that is filed under seal in a lawsuit or other proceeding. If Employee files a lawsuit for retaliation by Employer for reporting a suspected violation of law, Employee may disclose the trade secret to Employee's attorney and use the trade secret information in the court proceeding, if Employee files any document containing the trade secret under seal, and does not disclose the trade secret, except pursuant to court order. Nothing in this Agreement and Release is intended to conflict with 18 U.S.C. § 1833(b) or create liability for disclosures of trade secrets that are expressly allowed by such section.

5. Cooperation. Employee agrees to make **[himself/herself]** reasonably available at times and for durations reasonably acceptable to both parties to assist the Employer with respect to any issues wherein the Employer considers Employee's knowledge or expertise reasonably beneficial. The Employer will reimburse Employee for all reasonable out of pocket expenses that incurred while [**he/she**] is engaged in such activity. Employee will also cooperate fully with the Employer in the defense or prosecution of any claims or actions now in existence or which may be brought in the future against or on behalf of the Employer that relate to events or occurrences that transpired while the Employee was employed by the Employer. Employee's full cooperation in connection with such claims or actions shall include, but not be limited to, being available to meet with counsel to prepare for discovery or trial and to act as a witness on behalf of the Employer at mutually convenient times. Employee shall also cooperate fully with the Employer in connection with any such investigation or review of any federal, state or local regulatory authority as any such investigation or review relates to events or occurrences that transpired while Employee was employed by the Employer. The Employer shall pay for any reasonable out-of-pocket expenses incurred by Employee in connection with **[his/her]** performance of the obligations pursuant to this paragraph 5. Employee's performance under this paragraph 5 following the Termination Date shall be subject to **[his/her]** then current employment obligations.

6. Nonsolicitation. To the extent permitted by applicable law as applied to Employee, during Employee's employment with the Employer and for a period of **[ENTER EQUIVALENT MONTHS OF SEVERANCE BENEFIT]** months following **[his/her]** last day of employment with the Employer, Employee shall not, directly or indirectly, either on **[his/her]** own behalf or on behalf of any other person or entity, solicit, induce or encourage, or attempt to solicit, induce or encourage, (i) the resignation of any director, officer, employee or independent contractor of the Employer (each a "Restricted Firm Person"), or (ii) in the case of an independent contractor, any reduction in the services such independent contractor provides to the Employer.

7. Return of Property. Employee represents that **[he/she]** has returned (or will return) to Employer all property belonging to the Employer, including but not limited to electronic devices (e.g., Blackberry and/or laptop computer), keys, card access to buildings and office floors, and business information and documents.

8. Severability. If any provision of this Agreement and Release is held to be illegal, void, or unenforceable, such provision shall be of no force or effect. However, the illegality or unenforceability of such provision shall have no effect upon, and shall not impair the enforceability of, any other provision of this Agreement and Release. Further, to the extent any provision of this Agreement and Release is deemed to be overbroad or unenforceable as written, such provision shall be given the maximum effect permissible under law.

9. Entire Agreement. This Agreement and Release represents the entire understanding between the parties hereto with respect to the subject matter hereof, and may not be changed or modified except by a written agreement signed by both of the parties hereto after the Effective Date of this Agreement and Release. In the event of any conflict between any of the provisions of this Agreement and Release and the provisions of the Severance Plan, the terms of the Severance Plan shall govern.

10. Governing Law. Except as may be preempted by federal law or as set forth in paragraph 6, this Agreement and Release shall be governed by the laws of the State of California, without regard to conflict of laws principles, and the parties in any action arising out of this Agreement and Release shall be subject to the personal jurisdiction and venue of the federal and state courts, as applicable, in the County of San Francisco, California.

11. Non-Disclosure. The parties agree that this Agreement and Release and its terms are confidential and shall be accorded the utmost confidentiality. Employee hereby agrees to keep confidential and not disclose the terms and conditions of this Agreement to any person or entity without the prior written consent of the Employer, except to Employee's accountants, attorneys and/or spouse, provided that they also agree to maintain the confidentiality of this Agreement. Employee shall be responsible for any disclosure by them. Employee further represent that Employee has not disclosed the terms and conditions of this Agreement to anyone other than Employee's attorneys, accountants and/or spouse. This Section 11 does not prohibit disclosure of this Agreement by any party if required by law, provided that if Employee is required to make such disclosure the Employee has given the Employer prompt written notice of any legal process and cooperated with the Employer's efforts to seek a protective order.

12. Confidential Information. Employee acknowledges that during the course of Employee's employment with the Employer, Employee has had access to information relating to the Employer and its business that is not generally known by persons not employed by the Employer and that could not easily be determined or learned by someone outside of the Employer ("Confidential Information") Such information is confidential or proprietary and may include but not be limited to customer or client contact lists, trade secrets, patents, copyrighted materials, proprietary computer software and programs, products, systems analyses, lists of suppliers and supplier contracts, internal policies and marketing strategies, financial information relating to the Employer and its employees, and other documents and information that provide the Employer with a competitive advantage and that could not be easily determined or learned or obtained by someone outside the Employer. Employee further acknowledges that: (i) such confidential and proprietary information is the exclusive, unique, and valuable property of the Employer; (ii) the businesses of the Employer depend on such confidential and proprietary information; and (iii) the Employer wishes to protect such confidential and proprietary information by keeping it confidential for the use and benefit of the Employer. Employee agrees not to disclose or use such Confidential Information at any time in the future, except if authorized by the Employer in writing or if required in connection with a subpoena or other legal process or investigation by any governmental, regulatory or self-regulatory agency or in connection with any legal proceeding brought against Employee, or in connection with a proceeding to enforce this Agreement.

13. Remedies. Employee acknowledges and agrees that the Employer will suffer irreparable damage if any of the provisions of paragraphs 5, 6 or 12 of this Agreement and Release are breached and that the Employer's remedies at law for a breach of such provisions would be inadequate and, in recognition of this fact, Employee agrees that, in the event of such a breach, in addition to any remedies at law, the Employer will be entitled to obtain equitable relief in the form of specific performance, temporary restraining order, a temporary or permanent injunction or any other equitable remedy which may then be available.

14. Binding Agreement. This Agreement and Release is binding upon, and shall inure to the benefit of, the parties and their respective heirs, executors, administrators, successors and assigns.

15. ADEA Provisions. Employee acknowledges that **[he/she]**: (a) has carefully read this Agreement and Release in its entirety; (b) has had an opportunity to consider the terms of this Agreement and Release **[insert only if employees are over 40:** and the disclosure information attached hereto as Exhibit I (which is provided pursuant to the Older Workers Benefit Protection Act)] for at least [**twenty- one (21)**] [**forty-five (45)**] days; (c) is hereby advised by the Company in writing to consult with an attorney of **[his/her]** choice in connection with this Agreement and Release; (d) fully understands the significance of all of the terms and conditions of this Agreement and Release and has discussed them with an attorney of **[his/her]** choice, or has had a reasonable opportunity to do so; and (e) is signing this Agreement and Release voluntarily and of **[his/her]** own free will and agrees to abide by all the terms and conditions contained herein.

16. Revocation/Effective Date. Employee may accept this Agreement and Release by signing it before a notary public and delivering it to **[INSERT NAME AND ADDRESS OF CONTACT]** on or before the [**twenty-first (21st)**] [**forty-fifth (45th)**] day after **[he/she]** receives this Agreement and Release. Notwithstanding the foregoing, Employee may not sign this Agreement and Release before **[his/her]** last day of employment and this Agreement and Release will not be accepted or effective if signed before the Termination Date. After signing this Agreement and Release, Employee shall have [**seven (7)**] days (the "Revocation Period") to revoke **[his/her]** decision by indicating **[his/her]** desire to do so in writing delivered to **[INSERT NAME]** at the above address by no later than the last day of the Revocation Period. If the last day of the Revocation Period falls on a Saturday, Sunday or holiday, the last day of the Revocation Period will be deemed to be the next business day. Provided Employee does not revoke this Agreement and Release during the Revocation Period, the Effective Date of this Agreement and Release shall be the later of the [**eighth (8th)**] day after Employee signs this Agreement and Release or the day after the last day of the Revocation Period (the "Effective Date").

Dated: ____________________

____
(signature)
[Employee]
Dated: ____________________

ICHOR HOLDINGS, LTD
Accepted by: ____________________
Name: ____________________

Exhibit 21.1

Name of Subsidiary	Jurisdiction of Incorporation, Organization, or Formation
Ichor Holdings, Ltd.	Cayman Islands
Ichor Intermediate Holdings, Ltd.	Cayman Islands
Icicle Acquisition Holding Co-op	Netherlands
Icicle Acquisition Holding B.V.	Netherlands
Ichor Holdings Ltd.	Scotland
Ichor Systems Ltd.	Scotland
Ichor Holdings, LLC	Delaware
Ichor Systems, Inc.	Delaware
Ichor Systems Korea Ltd.	Korea
Ichor Systems Malaysia Sdn Bhd	Malaysia
Ichor Systems Singapore, PTE Ltd.	Singapore
Precision Flow Technologies, Inc.	New York
Ajax-United Patterns & Molds, Inc.	California
Cal-Weld, Inc.	California
Talon Innovations Corporations	Minnesota
Talon Innovations (FL) Corporation	Florida
Talon Innovations Korea	Korea
IAN Engineering Co., Ltd.	Korea

Exhibit 23.1

Consent of Independent Registered Public Accounting Firm

The Board of Directors
Ichor Holdings, Ltd.:

We consent to the incorporation by reference in the registration statements (No. 333-215984 and No. 333-219846) on Form S-8 of Ichor Holdings, Ltd. and subsidiaries (the Company) of our report dated March 8, 2019, with respect to the consolidated balance sheets of Ichor Holdings, Ltd. and subsidiaries as of December 28, 2018 and December 29, 2017, and the related consolidated statements of operations, shareholders' equity, and cash flows for each of the years in the three-year period ended December 28, 2018, and the related notes (collectively, the consolidated financial statements), which report appears in the December 28, 2018 annual report on Form 10-K of the Company.

Our report on the consolidated financial statements refers to a change in the method of accounting for revenue recognition in 2018 due to the adoption of Accounting Standards Codification 606, *Revenue from Contracts with Customers*.

/s/ KPMG LLP

Portland, Oregon

March 8, 2019

Exhibit 31.1

CEO CERTIFICATION PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Thomas M. Rohrs, certify that:

1. I have reviewed this annual report on Form 10-K of Ichor Holdings, Ltd.;

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

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

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

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

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

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

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

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

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

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

Date: March 8, 2019

By: /s/ Thomas M. Rohrs
Thomas M. Rohrs
Chief Executive Officer

Exhibit 31.2

CFO CERTIFICATION PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Jeffrey S. Andreson, certify that:

1. I have reviewed this annual report on Form 10-K of Ichor Holdings, Ltd.;

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

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

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

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

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

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

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

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

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

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

Date: March 8, 2019

By: /s/ Jeffrey S. Andreson
Jeffrey S. Andreson
Chief Financial Officer

Exhibit 32.1

CERTIFICATION PURSUANT TO SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Annual Report of Ichor Holdings, Ltd. (the “Company”) on Form 10-K for the period ending December 28, 2018 as filed with the Securities and Exchange Commission on the date hereof (the “Report”), I certify, to my knowledge, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that:

(1) The Report fully complies with the requirements of section 13(a) or 15(d), as applicable, of the Securities Exchange Act of 1934, as amended; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and result of operations of the Company.

Date: March 8, 2019

By: /s/ Thomas M. Rohrs
Thomas M. Rohrs
Chief Executive Officer

Exhibit 32.2

CERTIFICATION PURSUANT TO SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Annual Report of Ichor Holdings, Ltd. (the “Company”) on Form 10-K for the period ending December 28, 2018 as filed with the Securities and Exchange Commission on the date hereof (the “Report”), I certify, to my knowledge, pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that:

(1) The Report fully complies with the requirements of section 13(a) or 15(d), as applicable, of the Securities Exchange Act of 1934, as amended; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and result of operations of the Company.

Date: March 8, 2019

By: /s/ Jeffrey S. Andreson
Jeffrey S. Andreson
Chief Financial Officer