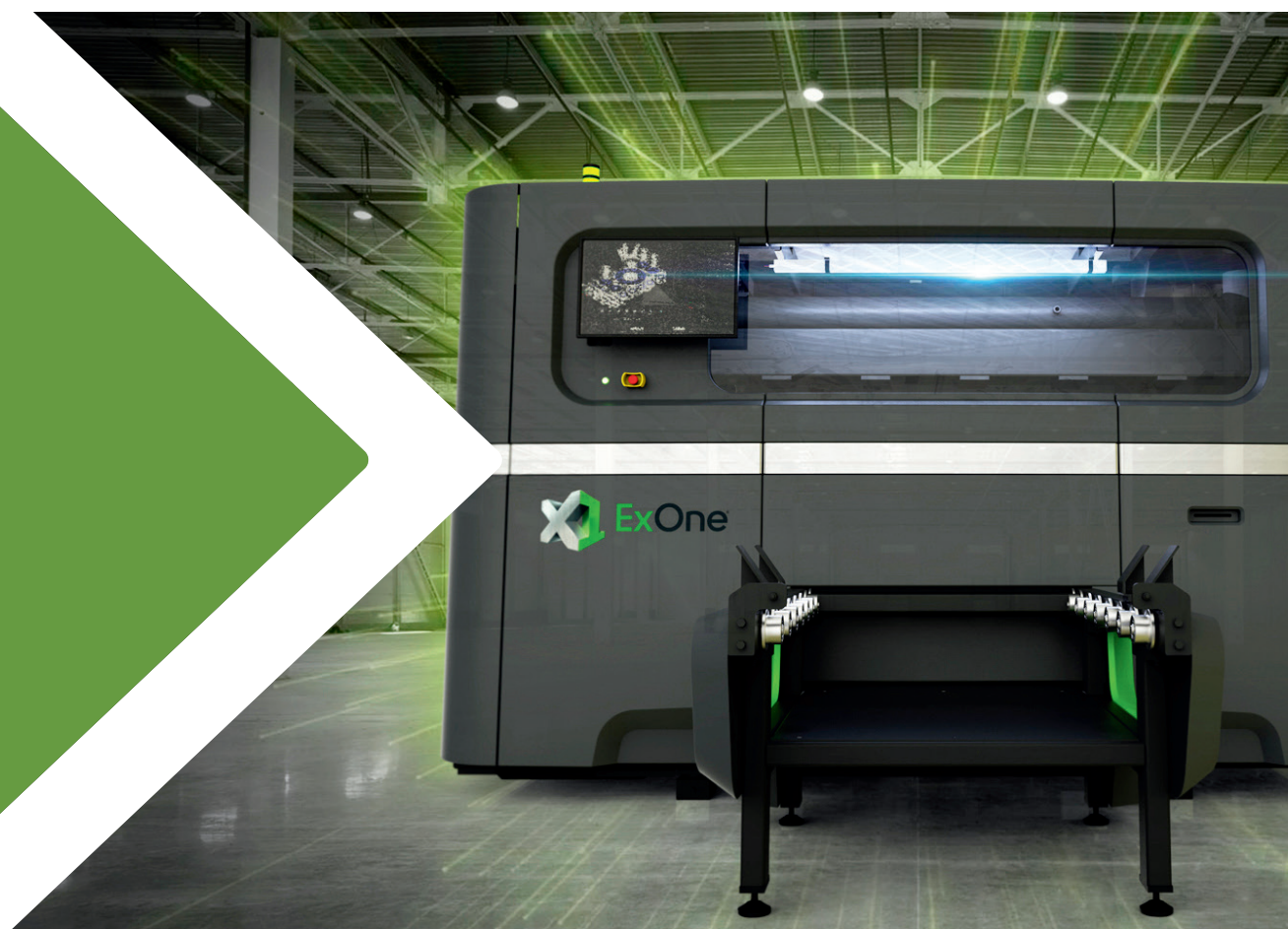




# ExOne™

Collaborate. Innovate. Accelerate.

## 2019 ANNUAL REPORT



### INDUSTRIAL BINDER JET 3D PRINTING LEADERSHIP





**Dear Fellow Stockholders:**

2019 was a busy year for ExOne, as we engaged a sharper strategic focus with many new technology advancements and organizational enhancements. We continue to lead the industry with our revolutionary capabilities in binder jetting technology while other participants in the competitive landscape reinforce the opportunity. We continue to roll out new product and material developments at a rapid pace. More than half of our current machine lineup is now new, having been introduced over the last eighteen months.

***Historic Level of New Product and Materials Developments***

- Shipments began for the S-Max Pro™ sand printer, our fastest industrial production system yet.
- We patented and launched Triple ACT, an advanced compaction technology for metal binder jetting.
- Shipping began for our new X1 25Pro™ mid-sized metal printer.
- We announced the introduction of our X1 160Pro™ metal production printer, our fastest and largest system for direct printing of parts.
- We launched a wave of new materials and binders, with an updated qualification process.

***Investments in Our Operating Model and Capital Structure***

Internally, we made investments in our leadership team and we also expanded our customer-facing resources. Doubling the customer-facing resources we had a year ago, we now have more touchpoints than ever with customers around the globe. Despite significant investments, we continue to prudently and efficiently manage our costs. This positions us well to realize operating leverage as we grow.

From a capitalization perspective, in early 2020 we successfully completed an \$18.5 million sale-leaseback associated with our European headquarters and operating facility in Germany. We also reduced our credit facility and extended its tenure into 2024. Combined, the closing of these transactions expanded our liquidity by more than 50% as compared to December 31, 2019, supporting our growth plans for 2020 and beyond.

***Our Commitment to Sustainability***

We at ExOne have always realized that our binder jetting technology is “green” and we have recently expanded our communication to stakeholders on the sustainability value that we provide. Our vision is to “**deliver sustainable manufacturing without limitations.**” Compared with traditional manufacturing processes, our binder jetting technology lends itself to a number of sustainability drivers. These include such attributes as producing less waste, using lighter weight components, and using recycled materials. We also facilitate sustainable supply chains, ones that are shorter, decentralized and closer to end customers, and with less risk.

***Outlook and Effect of COVID-19 Response***

We are encouraged by the strength of our record backlog entering 2020, as well as our active pipeline. Market acceptance of our newly introduced products has been very favorable and reassuring. However, recent restrictions intended to limit the spread of COVID-19 have caused significant disruption to the economy. Our business and the timing of customer decisions, as well as the production and delivery of our products, will likely be impacted. While COVID-19 will impede our short-term performance, we believe that our technology will continue to gain acceptance globally, and perhaps accelerate the additive manufacturing revolution that is currently underway. In closing, we’d like to extend a thank you to each of our employees for their focus and innovation, advancing ExOne’s leadership position in the global adoption of binder jetting technology.

Sincerely,

A handwritten signature in dark ink, appearing to read 'S. Kent Rockwell'.

S. Kent Rockwell  
Chairman

A handwritten signature in dark ink, appearing to read 'John Hartner'.

John Hartner  
Chief Executive Officer

April 3, 2020



**UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION  
WASHINGTON, DC 20549**

**FORM 10-K**

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

**For the fiscal year ended December 31, 2019**

**OR**

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

**For the transition period from \_\_\_\_\_ to \_\_\_\_\_**

**Commission file number 001-35806**

**The ExOne Company**

(Exact Name of Registrant as Specified in its Charter)

**Delaware**  
(State or Other Jurisdiction of  
Incorporation or Organization)

**46-1684608**  
(I.R.S. Employer  
Identification No.)

**127 Industry Boulevard  
North Huntingdon, PA 15642**  
(Address of Principal Executive Offices) (Zip Code)

**(724) 863-9663**  
(Registrant's telephone number, including area code)

**Securities registered pursuant to Section 12(b) of the Act:**

| Title of each class | Trading symbol | Name of each exchange on which registered |
|---------------------|----------------|-------------------------------------------|
| Common stock        | XONE           | The Nasdaq Stock Market                   |

**Securities registered pursuant to Section 12(g) of the Act:**

**None**

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

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

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

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

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

Large accelerated filer ☐

Accelerated filer ☒

Non-accelerated filer ☐

Smaller reporting company ☒

Emerging growth company ☐

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

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

The aggregate market value of common stock held by non-affiliates as of the last business day of the registrant's most recently completed second fiscal quarter was \$104.8 million.

As of March 12, 2020, 16,450,973 shares of common stock, par value \$0.01 per share, were outstanding.

**DOCUMENTS INCORPORATED BY REFERENCE**

Portions of the registrant's definitive proxy statement to be filed pursuant to Regulation 14A of the general rules and regulations under the Securities Exchange Act of 1934, as amended, for its 2020 Annual Meeting of Stockholders are incorporated by reference into Part III of this Annual Report on Form 10-K.

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## PART I

### Item 1. Business.

#### General

As used in this Annual Report on Form 10-K, unless the context otherwise requires or indicates, the terms “ExOne,” “Company,” “we,” “our,” “ours,” and “us” refer to The ExOne Company and its wholly-owned subsidiaries.

#### Cautionary Statement Concerning Forward-Looking Statements

This Annual Report on Form 10-K may contain forward-looking statements within the meaning of the Private Securities Litigation Reform Act with respect to our future financial or business performance, strategies, or expectations. Forward-looking statements typically are identified by words or phrases such as “trend,” “potential,” “opportunity,” “pipeline,” “believe,” “comfortable,” “expect,” “anticipate,” “current,” “intention,” “estimate,” “position,” “assume,” “outlook,” “continue,” “remain,” “maintain,” “sustain,” “seek,” “achieve,” as well as similar expressions, or future or conditional verbs such as “will,” “would,” “should,” “could” and “may.”

We caution that forward-looking statements are subject to numerous assumptions, risks and uncertainties, which change over time. Forward-looking statements speak only as of the date they are made and we assume no duty to and do not undertake to update forward-looking statements. Actual results could differ materially from those anticipated in forward-looking statements and future results could differ materially from historical performance.

In addition to risk factors previously disclosed in our reports and those identified elsewhere in this report, the following factors, among others, could cause results to differ materially from forward-looking statements or historical performance: our ability to consistently generate operating profits; fluctuations in our revenues and operating results; our competitive environment and our competitive position; our ability to enhance our current three-dimensional (“3D”) printing machines and technology and develop and introduce new 3D printing machines; our ability to qualify more industrial materials in which we can print; demand for our products; the availability of skilled personnel; the impact of loss of key management; the impact of market conditions and other factors on the carrying value of long-lived assets; our ability to continue as a going concern; the impact of customer specific terms in machine sale agreements on the period in which we recognize revenue; risks related to global operations including effects of the coronavirus disease COVID-19; foreign currency; the adequacy of sources of liquidity; the amount and sufficiency of funds for required capital expenditures, working capital, and debt service; dependency on certain critical suppliers; nature or impact of alliances and strategic investments; reliance on critical information technology systems; the effect of litigation, contingencies and warranty claims; liabilities under laws and regulations protecting the environment; the impact of governmental laws and regulations; operating hazards, war, terrorism and cancellation or unavailability of insurance coverage; the impact of disruption of our manufacturing facilities or ExOne Adoption Centers (“EACs”); the adequacy of our protection of our intellectual property; and expectations regarding demand for our industrial products, operating revenues, operating and maintenance expenses, insurance expenses and deductibles, interest expenses, debt levels, and other matters with regard to outlook.

These and other important factors, including those discussed under Item 1A, “Risk Factors” and Item 7, “Management’s Discussion and Analysis of Financial Condition and Results of Operations” in this Annual Report on Form 10-K, may cause our actual results of operations to differ materially from any future results of operations expressed or implied by the forward-looking statements contained in this Annual Report on Form 10-K. Before making a decision to purchase our common stock, you should carefully consider all of the factors identified in this Annual Report on Form 10-K that could cause actual results to differ from these forward-looking statements.

This Annual Report on Form 10-K may contain trademarks, service marks and trade names of other companies, which are the property of their respective owners. Solely for convenience, marks and trade names referred to in this Annual Report on Form 10-K may appear without the ® or TM symbols, but such references are not intended to indicate, in any way, that we will not assert, to the fullest extent under applicable law, our rights or the right of the applicable licensor to these marks and trade names. Third-party marks and trade names used herein are for nominative informational purposes only and their use herein in no way constitutes or is intended to be commercial use of such names and marks. The use of such third-party names and marks in no way constitutes or should be construed to be an approval, endorsement or sponsorship of us, or our products or services, by the owners of such third-party names and marks.

#### Our History

Our business began as the advanced manufacturing business of the Extrude Hone Corporation, which manufactured its first 3D printing machine in 2003 using licensed technology developed by researchers at the Massachusetts Institute of Technology (“MIT”). In 2005, our business assets were transferred to The Ex One Company, LLC, a Delaware limited liability company, when Extrude Hone Corporation was acquired by a third party. In 2007, we were acquired by S. Kent Rockwell through his wholly-owned company, Rockwell Forest Products, Inc. On January 1, 2013, the Company was formed when The Ex One Company, LLC was merged with and into a Delaware corporation formed in December 2012, which changed its name to The ExOne Company. On February 12, 2013, we completed our initial public offering, raising \$90.4 million in unrestricted net proceeds after underwriting commissions and offering costs. Subsequent secondary offerings of our common stock have resulted in raising \$78.0 million in additional unrestricted net proceeds after underwriting commissions and offering costs.

## **The Additive Manufacturing Industry and 3D Printing**

3D printing is the most common type of an emerging manufacturing technology that is broadly referred to as additive manufacturing (“AM”). In general, AM is a term used to describe a manufacturing process that produces 3D objects directly from digital or computer models through the repeated deposit of very thin layers of material. 3D printing is the process of joining materials from a digital 3D model, usually layer by layer, to make objects using a printhead, nozzle, or other printing technology. The terms “AM” and “3D printing” are often used interchangeably, as the media and marketplace have popularized the term 3D printing rather than AM, which is the industry term. AM represents a transformational shift from traditional forms of manufacturing (e.g., machining or tooling), which are sometimes referred to as subtractive manufacturing. We believe that AM and 3D printing are increasingly poised to displace traditional subtractive manufacturing methodologies in a growing range of industrial applications.

AM methods generally include the following:

- Material extrusion;
- Material jetting;
- Powder bed fusion;
- Directed energy deposition;
- Vat photopolymerization;
- Sheet lamination; and
- Binder jetting.

Each of the methods above includes one or more underlying technologies used to address specific applications. From our inception, our focus has been specifically targeted on binder jetting technologies for industrial applications.

Historically, AM had focused on prototyping and small, limited production in order to find acceptance of its varying technologies by end users in order to convince users of traditional methods of the viability of such new applications. As AM has evolved, the focus has progressed into production readiness and increasing reliability and repeatability standards associated with higher volumetric output and specifications that industrial applications demand.

### **ExOne and 3D Printing**

We are a global provider of 3D printing machines and 3D printed and other products, materials and services to industrial customers. Our business primarily consists of manufacturing and selling 3D printing machines and printing products to specification for our customers using our installed base of 3D printing machines. Our machines serve direct and indirect applications. Direct printing produces a component; indirect printing makes a tool to produce a component. We offer pre-production collaboration and print products for customers through our network of EACs. We also supply the associated materials, including consumables and replacement parts, and other services, including training and technical support, that are necessary for purchasers of our 3D printing machines to print products. We believe that our ability to print in a variety of industrial materials, as well as our industry-leading volumetric output (as measured by build box size and printing speed), uniquely position us to serve the needs of industrial customers.

Our binder jetting technology was developed over 20 years ago by researchers at MIT. Our 3D printing machines build or print products from computer-aided drafting (“CAD”) models by depositing successive thin layers of particles of materials such as silicate sands or metal or ceramic powders in a “build box.” A moveable printhead passes over each layer and deposits a chemical binding agent in the selected areas where the finished product will be materialized. Each layer can be unique.

Depending on the industrial material used in printing, printed products may need post-production processing. We generally use silica sand or foundry sand for casting, both of which typically require no additional processing. Products printed in other materials, such as metals or ceramics, or for use in specific applications, may need varying amounts of heat treating or sintering, drying or curing, or other post-processing or finishing.

*Pre-Print.* We believe that our customers have the opportunity to take greater advantage of the design freedom that our 3D printing technology provides. Each of our 3D printing machines uses standard front-end software which gives us the ability to collaborate with our customers to develop and refine CAD designs that meet our customers’ specifications and can be read and processed by our 3D printing machines. We continue to invest in additional pre-print capabilities and resources that empower our customers to fully exploit the design freedom of 3D printing. This includes collaborative agreements with third parties, including our simulation software development agreement entered into with ANSYS, Inc. in November 2019.

*Industrial Materials.* We supply printing materials to our customers that have been qualified for use with our machines. As we experience increased demand for our products globally, it is essential that the material supply chain and distribution channels be in close proximity to our current and prospective customers. For the highest quality printed products, the sand grains and metal or ceramic particles used in the 3D printing process must be uniform in size and meet very specific tolerances. We continue to focus on material development activities associated with our 3D printing process, including collaborative arrangements with customers targeted at local supply resources.

*Our Machines.* Each of our 3D printing machine platforms include a computer processor which controls the printhead(s) utilized in applying layers of binding agent to a material spread across the build area. Our 3D printing machines are differentiated by the varying size of our build box profiles and the speed at which we can jet binding agent and effectively distribute materials in the printing process. We currently manufacture our 3D printing machines in both Germany and the United States. Our machines serve direct (metal or ceramic) and indirect (sand) applications. Direct printing produces a component; indirect printing makes a tool to produce a component. Our focus is on enhancing our existing machine technologies by expanding our material capabilities for both direct and indirect applications, growing the size of our platforms to meet the needs of industrial customer volume demands and optimizing the speed and quality of our printing processes.

Our 3D printing machines are used primarily to manufacture industrial products that are ordered in relatively low volumes, are highly complex and have a high value to the customer. Our technology is not appropriate for the mass production of simple parts, such as certain higher volume injection molded parts or certain higher volume parts made in metal stamping machines. Traditional manufacturing technology is more economical in making those parts. While we expect over time to be able to increase the kinds of parts that we can make more economically than using subtractive manufacturing, we do not expect to use our technology to make simple, low-cost, mass-produced parts for the foreseeable future.

*Post-Print Processing.* After a product is printed, the bound and unbound powder in the build box requires curing of the chemical binding agent. For indirect printing of sand molds and cores, curing may occur at room temperature and the printed product is complete after the binder is cured. For certain binder types, a drying process (utilizing an industrial microwave or other means) may be necessary. The mold or core is then poured at a foundry, yielding the finished metal product. We believe that our casting technology offers a number of advantages over traditional casting methods, including enhanced design complexity, increased yield, weight reduction and improved thermal range.

For direct printing, the product needs to be either sintered, or sintered and infiltrated. With sintering, the product is placed into a furnace in an inert atmosphere to sinter the bonded particles and form a strong bonded porous structure. The porous structure can be further infiltrated with another material to fill the voids. After the sintering and infiltration, the product can be polished and finished with a variety of standard industrial methods and coatings. We believe that our 3D printing capabilities enable customers to develop the ideal design for products, freeing them of some of the design constraints inherent in traditional manufacturing, in the industrial metal of choice and in a more efficient manner than traditional manufacturing methods.

## **Our Business Strategy**

The principal elements of our growth strategy include:

- ***Expand Our Customer and Application Focus.*** We intend to leverage our substantial experience in binder jetting technology to focus on the highest value industries and applications. We have made a significant investment in our commercial operations to drive our growth in this area.
- ***Extend the Capabilities of Our Core Technology.*** We intend to expand our core binder jetting technology through our machine platforms while at the same time lowering the total cost of ownership of our systems for our customers. We are also focused on driving modularity among our various machine platforms for both direct and indirect applications.
- ***Execute on 3D Printed and Other Products, Materials and Services Revenue Growth.*** We intend to execute on our plan to expand our offerings for 3D printed and other products, materials and services while better leveraging our growing global installed base of 3D printers.

## **Customers and Sales**

### ***Our Customers***

Our customers are located primarily in the Americas, Europe/Middle East/Africa (“EMEA”) and Asia Pacific (“APAC”) regions. We are a party to non-disclosure agreements with many of our customers and, therefore, are often prohibited from disclosing many of our customers’ identities. Our customers include a number of Fortune 500 companies that are leaders in their respective markets. During 2019 and 2018, we conducted a significant portion of our business with a limited number of customers, though not necessarily the same customers for each respective period. During 2019 and 2018, our five most significant customers represented 17.4% and 16.5% of our total revenue, respectively. During 2019 and 2018, there were no customers that individually represented 10.0% or greater of our total revenue. Sales of 3D printing machines are low volume, but generate significant revenue based on their per-unit pricing. Generally, sales of 3D printing machines are to different customers in each respective period. The timing of such sales may be dependent on various factors, including a customer’s capital budgeting cycle, its facility preparedness and the terms of the underlying arrangement with a customer (including certain substantive acceptance provisions) which may vary from period to period. The nature of our revenue from 3D printing machines does not leave us dependent upon a single or a limited number of customers. Sales of 3D printed and other products, materials and services generally result in a significantly lower aggregate price per order as compared to 3D printing machine sales. The nature of our revenue from 3D printed and other products, materials and services does not leave us dependent upon a single or a limited number of customers.

### ***Educating Our Customers***

Educating our customers and raising awareness in our target markets about the many uses and benefits of our binder jetting technology is an important part of our sales process. We believe that customers who experience the efficiency gains, decreased lead-time, increased design flexibility, and decreased cost potential of 3D printing, as compared to subtractive manufacturing, are more likely to purchase our 3D printing machines and be repeat customers of our products and services. We educate our customers on the design freedom, speed, and other benefits of 3D printing by providing printing and design services and support through our EACs. We also seek to expose key potential users to our products through our EACs, installed machines at customers' locations, university programs, and sales and marketing efforts. Additionally, our EACs provide our customers exposure to a greater variety of our latest machine platforms and material sets.

### ***ExOne Adoption Centers***

We have established a network of EACs in North Huntingdon, Pennsylvania; Troy, Michigan; Gersthofen, Germany; and Kanagawa, Japan. Each of our EACs are certified to ISO 9001:2015 standards with various scopes. Through our EACs, we provide sales and marketing and delivery of support and printing services to our customers. Our customers see our 3D printing machines in operation and can evaluate their production capabilities before ordering a 3D printing machine or a printed product or service. While our centers are scalable and have a well-defined footprint that can be easily replicated to serve additional regional markets, we are focusing on enhancing our existing centers to enable adoption rather than geographic expansion. As described below, enhancing our position in strategic locations around the world is an important part of our long-term business strategy.

### ***Marketing and Sales***

We market our products under the ExOne brand name in three major geographic regions — the Americas, EMEA and APAC. Our sales are made primarily by our global sales force. Our sales force is augmented, in certain territories, by representatives with specific industry or territorial expertise. Even where we are supported by a representative, substantially all of our product and service offerings provided by our EACs are sold directly to customers by us.

We believe that our direct selling relationship helps to create one of the building blocks for our business — the creation of true collaboration between us and industrial customers who are interested in 3D printing. Increasingly, industrial producers are considering shifting from subtractive manufacturing techniques to 3D printing. Our marketing efforts include educating potential customers about 3D printing technology through collaboration, starting with pre-production services and continuing with production and technical support at our EACs.

### ***Competition***

Other companies are active in the market for 3D printing products and services. These companies use a variety of AM methods, including:

- Material extrusion;
- Material jetting;
- Powder bed fusion;
- Directed energy deposition;
- Vat photopolymerization;
- Sheet lamination; and
- Binder jetting.

Some of the companies that have developed and employ one or more AM technologies include: 3D Systems Corporation, Stratasys Inc., HP Inc., Desktop Metal, EOS GmbH, SLM Solutions, EnvisionTEC, Voxeljet AG and General Electric Co.

We also compete with established subtractive manufacturers in the industrial products market. These companies often provide large-scale, highly capitalized facilities that are designed or built to fill specific production purposes, usually mass production. However, we believe that we are well positioned to expand our share of the industrial products market from these manufacturers as AM applications increase. As our technologies improve and our unit cost of production decreases, we expect to be able to compete with subtractive manufacturing on a wide range of products, thereby expanding our addressable market.

We believe that our competitive strengths include:

- ***Volumetric Output Rate.*** We believe that our binder jetting technology provides us the highest rate of volume output per unit of time among competing AM technologies. Because of our early entrance into the industrial market for AM and our investment in our core 3D printing technology, we have been able to improve the printing speed and expand the build box size of our 3D printing machines. As a result, we have made strides in improving the output efficiency of our 3D printing machines, as measured by volume output per unit of time. With continued advances in our core 3D printing technologies, we believe that our cost of production will continue to decline, increasing our ability to compete with subtractive manufacturing processes, particularly for complex products, effectively expanding our addressable market.

- **Printing Platform Size.** The volumetric size of the build box area upon which we construct a product is important to industrial customers who may want to either make a high number of products per job run or make an industrial product that has large dimensions and is heavy in final form. We believe that our technology and experience give us the potential to develop large footprint platforms to meet the production demands of current and potential industrial customers. In addition, we have created machine platforms in various size ranges in order to scale our technology to the varying demands of our customers.
- **Industrial Materials.** Our indirect 3D printing machines are able to manufacture sand molds and cores from silica sands and other specialty materials, which are the traditional materials for these casting products. Our direct 3D printing machines are capable of printing in a variety of industrial metals and ceramics. We are in varying stages of qualifying additional industrial materials for both indirect and direct applications and advancing materials that are printable in our machines. We also use liquid chemical binding agents during the printing process. We believe that our unique chemical binding agent technology can more readily achieve efficiency gains over time than other AM technologies, such as laser-fusing technologies.
- **International Presence.** Since our inception, we have structured our business to address major international markets. We have strategically established one or more EACs in each of the Americas, EMEA and APAC regions. Because many of our current or potential customers are global industrial companies, it is important that we have a presence in or near the areas where these companies have manufacturing facilities.

## Suppliers

Our largest suppliers in 2019, based upon dollar volume of purchases, were Bauer GmbH & Co KG, Fuji Film Dimatix, Astro Manufacturing & Design and PEKO Precision Products.

We buy our industrial materials from several suppliers and, except as set forth below, the loss of any one would not materially adversely affect our business. We currently have a single supplier of certain printhead components for our 3D printing machines. While we believe that this printhead component supplier is replaceable, in the event of the loss of this supplier, we could experience delays and interruptions that might adversely affect the financial performance of our business. Additionally, we obtain certain pre-production services through design and data capture providers, and certain post-production services through vendors with whom we have existing and good relationships. The loss of any one of these providers or vendors would not materially adversely affect our business.

## Research and Development

We spent \$9.9 million and \$10.7 million on research and development during 2019 and 2018, respectively. We expect to continue to invest in our research and development activities in the future.

A significant portion of our research and development expenditures have been focused on the following:

- Chemistry of print materials and binder formulation;
- Mechanics of droplet flight into beds of powder;
- Metallurgy of thermally processing metals that are printed through AM;
- Mechanical design elements of our 3D printing machines;
- Mechanics of spreading powders in a job box;
- Evaluation of product applications utilizing our 3D printing machines;
- Transfer of digital data through a series of software links to drive a printhead; and
- Synchronizing all of the above to print ever-increasing volumes of material per unit of time.

## Intellectual Property

**Patents and Licenses.** Significant portions of our technology are covered by a variety of patents. Through December 31, 2016, we were the worldwide licensee of certain patents held by MIT for certain AM printing processes (the “MIT Patents”), with exclusive rights to practice the patents in certain fields including the application of the printing processes to metals (with sublicensing rights), and non-exclusive rights to practice the patents in certain fields including the application of the printing processes to certain non-metals (without sublicensing rights) which gave us a significant head start in the AM industry.

We hold patents as a result of our own technological developments. Our patents were issued in the United States and in various foreign jurisdictions, including Germany and Japan. As a result of our commitment to research and development, we also have applied for other patents for equipment, processes, materials and 3D printing applications in the United States and in various foreign countries. The expiration dates of our patents range from 2021 to 2038. We are also a minority owner of patent rights for several patents in the United States and in various foreign jurisdictions as a successor interest to a 2003 agreement made between Generis GmbH and Extrude Hone GmbH.

We continue from time to time to evaluate our current licenses and patents. On March 1, 2018, our ExOne GmbH subsidiary notified Voxeljet AG that it has materially breached a 2003 Patent and Know-How Transfer Agreement and asserted its rights to set off damages as a result of the breaches against the annual license fee that we pay to Voxeljet AG under the agreement.

We have developed know-how and trade secrets relative to our 3D printing technology and believe that our early entrance into the industrial market provides us with a timing and experience advantage. Through our investment in our technology, we have been able to qualify industrial materials for use in our 3D printing machines and we intend to continue such efforts. In addition, we have taken steps to protect much of our technology as a trade secret. Given the significant steps that we have taken to establish our experience in AM for industrial applications, as well as our ongoing commitment to research and development, we intend to maintain our preeminent position in the AM industry market.

**Trademarks.** We have registrations in the United States for the following trademarks: EXONE, X1 ExOne Digital Part Materialization (plus design), EXCAST, EXMAL, EXTEC, INNOVENT, INNOVENT+, M-FLEX, M-PRINT, S MAX, S-MAX, S-PRINT, X1, X1-LAB, and X1 EXONE COLLABORATE. INNOVATE. ACCELERATE. (plus design). We also have pending applications in the United States the following trademarks: X1 25PRO, X1 160PRO, COLLABORATE. INNOVATE. ACCELERATE., and X1 EXONE (plus design). We also have registrations for the trademark EXONE in Canada, China, Europe (Community Trade Mark), Japan, and South Korea and an application pending for that trademark in Canada. We have registrations for X1 ExOne Digital Part Materialization (plus design) in Brazil, Canada, China, Europe (Community Trade Mark), Japan, and South Korea. We have an application pending in Canada for the trademark INNOVENT+. We have a registration for the trademark X1 in Europe (Community Trade Mark). We have registrations for a stylized form of X1 in Europe (Community Trade Mark). We have registrations for DIGITAL PART MATERIALIZATION in Japan and South Korea. We have registrations for the trademarks EXERIAL, INNOVENT, INNOVENT+, M-FLEX, S-MAX, and S-PRINT in Europe (Community Trade Mark). We also have registration for the trademark S-PRINT in Canada, China, and Japan.

**Trade Secrets.** The development of our products, processes and materials has involved a considerable amount of experience, manufacturing and processing know-how and research and development techniques that are not easily duplicated. We protect this knowledge as a trade secret through the confidentiality and non-disclosure agreements which all employees, customers and consultants are required to sign at the time they are employed or engaged by us. Additional information related to the risks associated with our intellectual property rights are described within Item 1A, “Risk Factors” of this Annual Report on Form 10-K.

### **Seasonality**

Purchases of our 3D printing machines are often subject to the capital expenditure cycles of our customers. Generally, 3D printing machine sales are higher in our third and fourth quarters than in our first and second quarters; however, as acceptance of our 3D printing machines as a credible alternative to traditional methods of production grows, we expect to limit the seasonality we experience.

### **Backlog**

At December 31, 2019, our backlog was approximately \$31.1 million, of which approximately \$27.1 million is expected to be fulfilled during the 12 months following such date. At December 31, 2018, our backlog was approximately \$12.3 million.

### **Environmental Matters**

Compliance with federal, state and local laws and regulations relating to the discharge of materials into the environment or otherwise relating to the protection of the environment has not had a material impact on capital expenditures, earnings or our competitive position. We are not the subject of any legal or administrative proceeding relating to the environmental laws of the United States or any country in which we have an office. We have not received any notices of any violations of any such environmental laws.

### **Employees**

At December 31, 2019, we employed a total of 313 (271 full-time) employees at our five global locations. None of these employees is a party to a collective bargaining agreement, and we believe our relations with employees are good.

### **Product, Geographic and Other Information**

Refer to Note 5 and Note 23 to the consolidated financial statements included in Part II Item 8 of this Annual Report on Form 10-K for product and geographic information related to our revenues (based on the country where the sale originated) and geographic information related to our long-lived assets (based on the physical location of assets). For information on risks related to our international operations refer to Item 1A, “Risk Factors”. Other information relating to our revenues, measurement of profit or loss and total assets is provided in the consolidated financial statements and related notes thereto in Part II Item 8 of this Annual Report on Form 10-K.

### **Sale-Leaseback of Gersthofen, Germany Facility**

On December 10, 2019, ExOne Property GmbH and ExOne GmbH (our “German Subsidiaries”) entered into a purchase agreement (the “Purchase Agreement”) with Solidas Immobilien und Grundbesitz GmbH, a private, unaffiliated German real estate investor (the “Buyer”), for the sale of our European headquarters and operating facility in Gersthofen, Germany (the “Facility”) for a cash price of €17.0 million (approximately \$18.5 million, of which approximately \$2.2 million was received prior to December 31, 2019). Concurrently with the execution of the Purchase Agreement, ExOne GmbH and the Buyer entered into a rental contract (the “Lease”) for the leaseback of the Facility for an initial aggregate annual rent totaling €1.5 million (approximately \$1.7 million), plus applicable taxes, which is fixed during the initial three-year term and is subject to adjustment on an annual basis (in accordance with the consumer price index for Germany) during the two five-year option extension periods. The sale-leaseback transaction closed on February 18, 2020.

### **Executive Offices**

Our principal executive offices are located at 127 Industry Boulevard, North Huntingdon, Pennsylvania 15642 and our telephone number is (724) 863-9663.

### **Available Information**

Our website address is <http://www.exone.com>. Information contained on our website is not incorporated by reference into this Annual Report on Form 10-K unless expressly noted.

We file reports with the Securities and Exchange Commission (“SEC”), which we make available on our website free of charge at <http://www.exone.com/financials.cfm>. These reports include Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q and Current Reports on Form 8-K, each of which is provided on our website as soon as reasonably practicable after we electronically file such materials with, or furnish them to, the SEC. We also make, or will make, available through our website other reports filed with or furnished to the SEC under the Securities Exchange Act of 1934, as amended (the “Exchange Act”), including our proxy statements and reports filed by officers and directors under Section 16(a) of that Act. You can also read and copy any materials we file with the SEC at the SEC’s Public Reference Room at 100 F Street, N.E., Washington, DC 20549. You can obtain additional information about the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330. In addition, the SEC maintains a website (<http://www.sec.gov>) that contains reports, proxy and information statements, and other information regarding issuers that file electronically with the SEC, including us.

You can obtain copies of exhibits to our filings electronically at the SEC’s website at [www.sec.gov](http://www.sec.gov) or by mail from the Public Reference Section of the SEC at 100 F Street, N.E., Washington, D.C. 20549 at prescribed rates. The exhibits are also available as part of the Annual Report on Form 10-K for the year ended December 31, 2019, which is available on our corporate website at [www.exone.com](http://www.exone.com). Stockholders may also obtain copies of exhibits without charge by contacting our General Counsel and Corporate Secretary at (724) 863-9663.

## Item 1A. Risk Factors.

### ***RISK FACTORS***

*As a smaller reporting company (“SRC”), we are not required to provide a statement of risk factors on our Annual Report on Form 10-K. However, we believe this information is valuable to our shareholders. We reserve the right to not provide risk factors in future filings.*

*You should carefully consider the following risks, together with all of the other information in this Annual Report on Form 10-K, including our consolidated financial statements and related notes, in evaluating our business, future prospects and an investment in our common stock. If any of the following risks and uncertainties develops into actual events, our business, financial condition, results of operations and cash flows could be materially adversely affected. In that case, the price of our common stock could decline and you may lose all or part of your investment.*

#### **Risks Related to Our Business and Industry**

##### ***We may not be able to consistently generate operating profits.***

Since our inception, we have not consistently generated operating profits, and we may be unable to consistently generate operating profits in the future if we are unable to execute on our business plan. Our operating expenses (which include research and development and selling, general and administrative expenses) were \$32.5 million and \$33.9 million for 2019 and 2018, respectively. Our research and development expenses are primarily for continued investment in our binder jetting technologies, including 3D printing machine development and materials development. Our selling, general and administrative expenses are primarily for employee-related costs and professional service fees, including those associated with managing a public company. We believe that our operating expenses may increase in future periods as we pursue our growth strategies. Increases in our research and development expenses and selling, general and administrative expenses will directly affect our future results of operations and may have an adverse effect on our financial condition.

##### ***Our revenues and operating results may fluctuate.***

Our revenues and operating results have fluctuated in the past from quarter-to-quarter and year-to-year and are likely to continue to vary due to a number of factors, many of which are not within our control. Both our business and the AM industry are changing and evolving rapidly, and our historical operating results may not be useful in predicting our future operating results.

Our machine orders are often subject to the adoption and capital expenditure cycles of our customers. Thus, revenues and operating results for any future period are not predictable with any significant degree of certainty. Comparing our operating results on a period-to-period basis may not be meaningful. You should not rely on our past results as an indication of our future performance.

Fluctuations in our operating results and financial condition may occur due to a number of factors, including, but not limited to, those listed below and those identified throughout this “Risk Factors” section:

- Our ability to compete with competitors (some of which may also serve as current or future customers of our products) that have significantly more resources than we have, have larger and more experienced sales and service teams and have more experience bringing new products to the market;
- The mix of machines and products that we sell during any period;
- The length of the adoption cycle and sales cycle for our 3D printing machines;
- Entry of new competitors into our markets;
- Changes in our pricing policies or those of our competitors, including our response to price competition;
- Delays between our expenditures to develop and market new or enhanced machines and products or to develop, acquire or license new technologies and processes and the generation of sales related thereto;
- Changes in the amount we spend to promote our products and services;
- The geographic distribution of our sales;
- Changes in the cost of satisfying our warranty obligations and servicing our installed base of products;
- Our level of research and development activities and their associated costs and rates of success;
- Changes in the size and complexity of our organization;
- Interruptions to or other problems with our information technology systems, manufacturing processes or other operations;
- Changes in regulatory requirements governing the handling and use of certain chemicals or powders printed or used in our equipment;

- General economic and industry conditions that affect end-user demand and end-user levels of product design and manufacturing; or
- Changes in accounting rules and tax laws.

Due to the foregoing factors, you should not rely on quarter-to-quarter or year-to-year comparisons of our operating results as an indicator of future performance.

***Customer demands for certain qualities and capabilities in our machines are constantly evolving. We may not be able to respond to customer demand as quickly as a better capitalized competitor may be able to respond.***

Generally, our business is focused on the sale of 3D printing machines for, and products manufactured using, AM. We have encountered and will continue to encounter risks and difficulties frequently experienced by growing companies in a market subject to innovation and rapidly developing and changing technology. A variety of technologies have the capacity to compete against one another in the AM market, which is, in part, driven by technological advances and end-user requirements and preferences, as well as the emergence of new standards and practices. Our ability to compete in the industrial AM market depends, in large part, on our success in enhancing and developing new 3D printing machines, in enhancing our current 3D printing machines, in enhancing and adding to our technology, and in developing and qualifying materials with which we can print. We believe that to remain competitive we must continuously enhance and expand the functionality and features of our products and technologies. However, we may not be able to:

- Develop new products and technologies that address the increasingly sophisticated and varied needs of prospective end-users;
- Enhance our existing products and technologies;
- Continue to leverage advances in binder jet printing and other industrial printhead technology;
- Respond to technological advances and emerging industry standards and practices on a cost-effective and timely basis;
- Develop products that are cost-effective or that otherwise gain market acceptance;
- Distinguish ourselves from our competitors in our industry; and
- Adequately protect our intellectual property as we develop new products and technologies.

***We face significant competition in many aspects of our business, which could cause our revenues and gross profit to decline. Competition could also cause us to reduce sales prices or to incur additional marketing or production costs, which could result in decreased revenue, increased costs and reduced margins.***

We compete for customers with a wide variety of producers of equipment for models, prototypes, other 3D objects and end-use parts as well as producers of print materials and services for this equipment. Some of our existing and potential competitors are researching, designing, developing and marketing other types of competitive equipment, print materials and services. Many of these competitors have financial, marketing, manufacturing, distribution and other resources that are substantially greater than ours.

We also expect that future competition may arise from the development of allied or related techniques for equipment and print materials that are not encompassed by our patents, from the issuance of patents to other companies that may inhibit our ability to develop certain products, from our entry into new geographic markets and industries and from improvements to existing print materials and equipment technologies. In addition, a number of companies that have substantial resources have announced that they intend to begin producing 3D printing machines, which will further enhance the competition we face.

We intend to continue to follow a strategy of product development to enhance our position to the extent practicable. We cannot assure you that we will be able to maintain our current position in the field or continue to compete successfully against current and future sources of competition. If we do not keep pace with technological change and introduce new products, our revenues and demand for our products may decrease.

***We may not be able to retain or hire the number of skilled employees that we need to achieve our business plan.***

For our business to grow in accordance with our business plan, we will need to recruit, hire, integrate and retain additional employees with the technical competence and engineering skills to operate our machines, improve our technology and processes and expand our technological capability to print using an increasing variety of materials. People with these skills are in short supply and may not be available in sufficient numbers to allow us to meet the goals of our business plan. In addition, new employees often require significant training and, in many cases, take significant time before they achieve full productivity. As a result, we may incur significant costs to attract and retain employees, including significant expenditures related to salaries and benefits, and we may lose new employees to our competitors or other companies before we realize the benefit of our investment in recruiting and training them. Moreover, new employees may not be or become as productive as we expect, as we may face challenges in adequately or appropriately integrating them into our workforce and culture. If we cannot obtain the services of a sufficient number of technically skilled employees, we may not be able to achieve our planned rate of growth, which could adversely affect our results of operations.

***Loss of key management or sales or customer service personnel could adversely affect our results of operations.***

Our future success depends to a significant extent on the skills, experience and efforts of our management and other key personnel. We must continue to develop and retain a core group of management individuals if we are to realize our goal of continued expansion and growth. While we have not previously experienced significant problems attracting and retaining members of our management team and other key personnel, there can be no assurance that we will be able to continue to retain these individuals and the loss of any or all of these individuals could materially and adversely affect our business.

***We may incur future impairment charges to our long-lived assets held and used.***

As a result of continued operating losses and cash flow deficiencies, we have completed certain tests for the recoverability of long-lived assets held and used at the asset group level. Assessing the recoverability of long-lived assets held and used requires significant judgments and estimates by management. We will be required to conduct additional testing for the recoverability of long-lived assets held and used to the extent that a triggering event requiring such testing is identified in a future period. A significant decrease in the market price of a long-lived asset, adverse change in the use or condition of a long-lived asset, adverse change in the business climate or legal or regulatory factors impacting a long-lived asset and continued operating losses and cash flow deficiencies associated with a long-lived asset, among other indicators, could cause a future assessment to be performed which may result in an impairment of long-lived assets held and used. The amount of any impairment could be significant and could have a material adverse impact on our financial condition and results of operations for the period in which the impairment is recorded.

***We may conclude that there is substantial doubt regarding our ability to continue as a going concern.***

As a result of our continued operating losses, cash flow deficiencies and liquidity, we may conclude that there is substantial doubt regarding our ability to continue as a going concern. In connection with this conclusion, if our independent registered public accounting firm issues a “going concern” opinion, it could impair our ability to finance our operations through the sale of equity, incurring debt, or other financing alternatives. If we fail to raise sufficient additional capital, we will not be able to completely execute our business plan. As a result our business would be jeopardized and we may not be able to continue.

***Some of our arrangements for 3D printing machines contain customer-specific provisions that may impact the period in which we recognize the related revenues under accounting principles generally accepted in the United States of America (“GAAP”).***

Some customers that purchase 3D printing machines from us may require specific, customized factors relating to their intended use of the machine or the installation of the machine in the customers’ facilities. These specific, customized factors are often required by the customers to be included in our commercial agreements relating to the purchases. As a result, our responsiveness to our customers’ specific requirements has the potential to impact the period in which we recognize the revenue relating to that 3D printing machine sale.

Similarly, some customers must build or prepare facilities to install our 3D printing machines, and the completion of such projects can be unpredictable, which can impact the period in which we recognize the revenue relating to that 3D printing machine sale.

***Defects in new products or in enhancements to our existing products that give rise to product returns or warranty or other claims could result in material expenses, diversion of management time and attention, and damage to our reputation.***

Our 3D printing machines may contain undetected defects or errors when first introduced or as enhancements are released that, despite testing, are not discovered until after a machine has been used. This could result in delayed market acceptance of those machines or claims from sales agents, end-users or others, which may result in litigation, increased end-user service and support costs and warranty claims, damage to our reputation and business or significant costs to correct the defect or error. We may from time to time become subject to warranty or product liability claims related to product quality issues that could lead us to incur significant expenses.

***Our business is subject to risks associated with having significant operations in Germany and selling machines and other products in other non-United States locations.***

We have significant manufacturing and development operations in Germany. In addition, a significant portion of our revenue is derived from transactions outside of the United States (60.8% and 54.3% for 2019 and 2018, respectively).

Our operations outside of the United States are subject to risks associated with the political, regulatory and economic conditions of Germany and other countries in which we sell or service machines, such as:

- Challenges in providing solutions across a significant distance, in different languages and among different cultures;
- Civil unrest, acts of terrorism and similar events;
- Fluctuations in foreign currency exchange rates;
- Potentially longer sales and payment cycles;
- Potentially greater difficulties in collecting accounts receivable;
- Potentially adverse tax consequences;
- Reduced protection of intellectual property rights in certain countries;

- Different, complex and changing laws governing intellectual property rights; sometimes affording reduced protection of intellectual property rights in certain countries;
- Difficulties in staffing and managing foreign operations;
- Laws and business practices favoring local competition;
- Costs and difficulties of customizing products for foreign countries;
- Compliance with a wide variety of complex foreign laws, treaties and regulations;
- Restrictions imposed by local labor practices and laws on our business and operations;
- Rapid changes in government, economic and political policies and conditions; political or civil unrest or instability, terrorism or epidemics and other similar outbreaks or events;
- Operating in countries with a higher incidence of corruption and fraudulent business practices;
- Seasonal reductions in business activity in certain parts of the world, particularly during the summer months in Europe and at year end globally;
- Costs and difficulties of customizing products for foreign countries;
- Transportation delays;
- Tariffs, trade barriers and other regulatory or contractual limitations on our ability to sell or develop our products in certain foreign markets;
- Becoming subject to the laws, regulations and court systems of many jurisdictions;
- Specific and significant regulations, including the European Union's ("EU") General Data Protection Regulation ("GDPR") which, as of May 2018, imposes compliance obligations on companies who possess and use data of EU residents, with resultant fines and penalties for failure to comply;
- Uncertainty and resultant political, financial and market instability arising from the United Kingdom's exit from the EU ("Brexit"); and
- Risks of violations of Foreign Corrupt Practices Act or similar anti-bribery laws.

In addition, our operating results may be affected by volatility in currency exchange rates and our ability to effectively manage our currency transaction and translation risks because we generally conduct our business, earn revenue and incur costs in the local currency of the countries in which we operate. For example, the financial condition and results of operations of Germany operations are reported in euros and then translated to United States dollars at the applicable currency exchange rate for inclusion in our consolidated financial statements. We do not manage our foreign currency exposure in a manner that would eliminate the effects of changes in foreign exchange rates, which means that changes in exchange rates between these foreign currencies and the United States dollar will affect the recorded levels of our foreign assets and liabilities, as well as our revenues, cost of sales, and operating margins, and could result in exchange losses in any given reporting period. Given the volatility of exchange rates, we can give no assurance that we will be able to effectively manage our currency transaction and/or translation risks or that any volatility in currency exchange rates will not have an adverse effect on our results of operations.

***Our commercial activities may be disrupted due to the outbreak of the new coronavirus-caused disease COVID-19.***

A new coronavirus has caused the outbreak of a new disease, COVID-19, which has resulted in government-enforced travel and business closures in China and other countries. Our sales, installation and service of 3D printing machines in China and other countries may be disrupted and the future spread of the disease may cause our commercial efforts in other countries to be disrupted. We may incur expenses or delays resulting in such events outside of our control, which could have a material adverse effect on our business, operating results and financial condition.

***We may need to raise additional capital from time to time if we are going to meet our growth strategy and may be unable to do so on attractive terms.***

Expanding our business to execute our growth strategy may require additional investments of capital from time to time, and our existing sources of cash and any funds generated from operations may not provide us with sufficient capital. For various reasons, including any current non-compliance with existing or future lending arrangements, additional financing may not be available when needed, or may not be available on terms favorable to us. If we fail to obtain adequate capital on a timely basis or if capital cannot be obtained at reasonable costs, we may not be able to achieve our planned rate of growth, which will adversely affect our results of operations. Additional equity financing may result in ownership and economic dilution to our existing stockholders and/or require us to grant certain rights and preferences to new investors. Also, although S. Kent Rockwell, our Chairman and our controlling stockholder, has previously provided capital to us through related entities (including our existing related party revolving credit facility), he has no obligation to do so and our stockholders should have no expectation that he will do so in the future.

***We are currently dependent on a single supplier of certain printhead components.***

We currently rely on a single source to supply certain printhead components used by our 3D printing machines. While we believe that there are other suppliers of printhead components upon which we could rely, we could experience delays and interruptions if our supply is interrupted that might temporarily impact the financial performance of our business.

***We may not be able to consummate and/or effectively integrate strategic transactions.***

We may from time to time engage in strategic transactions with third parties if we determine that they will likely provide future financial and operational benefits. Successful completion of any strategic transaction depends on a number of factors that are not entirely within our control, including our ability to negotiate acceptable terms, conclude satisfactory agreements and obtain all necessary regulatory approvals. In addition, our ability to effectively integrate an investment into our existing business and culture may not be successful, which could jeopardize future operational performance for the combined businesses.

We explore from time to time various strategic investments and/or alliances. With respect to strategic investments and/or alliances that we may pursue, there is no guarantee that we will complete such transactions on favorable terms or at all. The exploration, negotiation, and consummation of strategic investments and/or alliances may involve significant expenditures by us, which may adversely affect our results of operations at the time such expenses are incurred. We may not be able to successfully negotiate and complete a specific investment or alliance on favorable terms. If we do complete transactions, they may not ultimately strengthen our competitive position or may not be accretive to us for a period of time which may be significant following the completion of such transaction.

We may be required to pay cash, incur debt and/or issue equity securities to pay for any such transaction, each of which could adversely affect our financial condition and the value of our common stock. Our use of cash to pay for transactions would limit other potential uses of our cash. The issuance or sale of equity or convertible debt securities to finance any such transactions would result in dilution to our stockholders. If we incur debt, it could result in increased fixed obligations and could also impose covenants or other restrictions that could impede our ability to manage our operations.

***We rely on our information technology ("IT") systems to manage numerous aspects of our business and customer and supplier relationships, and a disruption or failure of these systems could adversely affect our results of operations.***

We rely on our IT systems to manage numerous aspects of our business and provide analytical information to management. We may incur significant costs in order to implement the security measures that we feel are necessary to protect our IT systems. However, our IT systems may remain vulnerable to damage despite our implementation of security measures that we deem to be appropriate. Our IT systems allow us to efficiently purchase products from our suppliers, provide procurement and logistic services, ship products to our customers on a timely basis, maintain cost-effective operations and provide service to our customers. Our IT systems are an essential component of our business and growth strategies, and a disruption to or failure of our IT systems, including our computer systems, could significantly limit our ability to manage and operate our business efficiently. Although we take steps to secure our IT systems, including our computer systems, intranet and internet sites, email and other telecommunications and data networks, the security measures we have implemented may not be effective and our systems may be vulnerable to, among other things, damage and interruption from power loss, including as a result of natural disasters, computer system and network failures, loss of telecommunication services, operator negligence, loss of data, security breaches and computer viruses. If our systems for protecting against cyber security risks prove not to be sufficient, we could be adversely affected by loss or damage of intellectual property, proprietary information, or client data, interruption of business operations, or additional costs to prevent, respond to, or mitigate cyber security attacks. Any such disruption or loss of business information could materially and adversely affect our reputation, brand, results of operations and financial condition.

***We could be subject to personal injury, property damage, product liability, warranty and other claims involving allegedly defective products that we supply.***

The products we supply are sometimes used in potentially hazardous applications, such as the assembled parts of an aircraft or automobile, that could result in death, personal injury, property damage, loss of production, punitive damages and consequential damages. While we have not experienced any such claims to date, actual or claimed defects in the products we supply could result in our being named as a defendant in lawsuits asserting potentially large claims.

We attempt to include legal provisions in our agreements with customers that are designed to limit our exposure to potential liability for damages arising from defects or errors in our products. However, it is possible that these limitations may not be effective as a result of unfavorable judicial decisions or laws enacted in the future. Any such lawsuit, regardless of merit, could result in material expense, diversion of management time and efforts and damage to our reputation, and could cause us to fail to retain or attract customers, which could adversely affect our results of operations.

***We could face liability if our 3D printers are used by our customers to print dangerous objects.***

Customers may use our 3D printing machines to print products that could be used in a harmful way or could otherwise be dangerous. For example, there have been news reports that 3D printing machines were used to print guns or other weapons. We have little, if any, control over what objects our customers print using our 3D printing machines, and it may be difficult, if not impossible, for us to monitor and prevent customers from printing weapons with our 3D printing machines. While we have never printed firearms in any of our EACs, there can be no assurance that we will not be held liable if someone were injured or killed by a weapon printed by a customer using one of our 3D printing machines.

***If any of our manufacturing facilities or EACs are disrupted, sales of our products may be disrupted, which could result in loss of revenues and an increase in unforeseen costs.***

We manufacture our machines at our facilities in Gersthofen, Germany and North Huntingdon, Pennsylvania. In addition, we have a network of EACs in the United States, Germany and Japan to provide sales and marketing and delivery of support and printing services to our customers. If the operations of these facilities are materially disrupted (including as a result of the coronavirus disease COVID-19), we would be unable to fulfill customer orders for the period of the disruption, we would not be able to recognize revenue on orders and we might need to modify our standard sales terms to secure the commitment of new customers during the period of the disruption and perhaps longer. Depending on the cause of the disruption, we could incur significant costs to remedy the disruption and resume product shipments. Such a disruption could have an adverse effect on our results of operations.

***Our manufacturing facilities, and our suppliers' and our customers' facilities are vulnerable to disruption due to natural or other disasters, strikes and other events beyond our control.***

A major earthquake, fire, tsunami, hurricane, cyclone or other disaster, such as a major flood, seasonal storms, nuclear event or terrorist attack affecting our facilities or the areas in which they are located, or affecting those of our customers or third party manufacturers or suppliers, could significantly disrupt our or their operations, and delay or prevent product shipment or installation during the time required to repair, rebuild or replace our or their damaged manufacturing facilities. These delays could be lengthy and costly. If any of our manufacturers', suppliers' or customers' facilities are negatively impacted by such a disaster, production, shipment and installation of our 3D printing machines could be delayed, which can impact the period in which we recognize the revenue related to that 3D printing machine sale. Additionally, customers may delay purchases of our products until operations return to normal. Even if we are able to respond quickly to a disaster, the continued effects of the disaster could create uncertainty in our business operations. In addition, concerns about terrorism, the effects of a terrorist attack, political turmoil, labor strikes, war or the outbreak of epidemic diseases (including the outbreak of the coronavirus disease COVID-19) could have a negative effect on our operations and sales.

***Under applicable employment laws, we may not be able to enforce covenants not to compete and therefore may be unable to prevent our competitors from benefiting from the expertise of some of our former employees.***

We generally enter into non-competition agreements with our employees. These agreements prohibit our employees, if they cease working for us, from competing directly with us or working for our competitors or customers for a limited period. We may be unable to enforce these agreements under the laws of the jurisdictions in which our employees work, including Germany and Japan, and it may be difficult for us to restrict our competitors from benefiting from the expertise of our former employees or consultants developed while working for us. If we cannot demonstrate that our legally protectable interests will be harmed, we may be unable to prevent our competitors from benefiting from the expertise of our former employees or consultants and our ability to remain competitive may be diminished.

**Risks Related to Our Intellectual Property**

***We may not be able to protect our trade secrets and intellectual property.***

Our success and future revenue growth will depend, in part, on our ability to protect our intellectual property. We cannot assure you that any of our existing or future intellectual property rights will be enforceable, will not be challenged, invalidated or circumvented, or will otherwise provide us with meaningful protection or any competitive advantage.

We rely primarily on a combination of trade secrets, patents, trademarks, confidentiality or non-disclosure agreements and other contractual arrangements with our employees, end-users and others to maintain our competitive position to protect our proprietary technologies and processes globally. While some of our technology is licensed under patents belonging to others or is covered by process patents which are owned or applied for by us, we have devoted substantial resources to the development of our technology, trade secrets, know-how and other unregistered proprietary rights and much of our key technology is not protected by patents. In particular, in fast-growing markets such as China and India, our technology is not protected by patents.

Despite our efforts to protect our proprietary rights, it is possible that competitors or other unauthorized third parties may obtain, copy, use or disclose our technologies, inventions, processes or improvements. While we enter into various agreements intended to protect our proprietary rights, these agreements may be breached and confidential information may be willfully or unintentionally disclosed, and these agreements can be difficult and costly to enforce or may not provide adequate remedies if violated. In addition, our competitors or other parties may learn of our proprietary rights in some other way. Because we cannot legally prevent one or more other companies from developing similar or identical technology to our unpatented technology, it is likely that, over time, one or more other companies may be able to replicate our technology, thereby reducing our technological advantages. If we do not protect our technology or are unable to develop new technology that can be protected by patents or as trade secrets, we may face increased competition from other companies, which may adversely affect our results of operations.

We do, from time to time, apply for patent protection for some of our intellectual property. Our pending patent applications may not be granted. We cannot assure you that any of our existing or future patents will not be challenged, invalidated, or circumvented or will otherwise provide us with meaningful protection. Furthermore, patents are jurisdictional in nature and therefore only protect us in certain markets, rather than globally. We may not be able to obtain foreign patents corresponding to our United States or foreign patent applications. Even if foreign patents are granted, effective enforcement in foreign countries may not be available. If our patents do not adequately protect our technology, our competitors may be able to offer additive manufacturing systems or other products similar to ours. Our competitors may also be able to develop similar technology independently or design around our patents, and we may not be able to detect the unauthorized use of our proprietary technology or take appropriate steps to prevent such use. Any of the foregoing events would lead to increased competition and lower revenues or gross margins, which could adversely affect our operating results.

If our patents and other intellectual property protections do not adequately protect our technology, our competitors may be able to offer products similar to ours. We may not be able to detect the unauthorized use of our proprietary technology and processes or take appropriate steps to prevent such use. Our competitors may also be able to develop similar technology independently or design around our patents. Any of the foregoing events would lead to increased competition and lower revenue or gross profits, which would adversely affect our results of operations.

***We may incur substantial costs enforcing or acquiring intellectual property rights and defending against third-party claims as a result of litigation or other proceedings.***

In connection with the enforcement of our intellectual property rights, opposing third parties from obtaining patent rights or disputes related to the validity or alleged infringement of our or third-party intellectual property rights, including patent rights, we have been and may in the future be subject or party to claims, negotiations or complex, protracted litigation. Intellectual property disputes and litigation, regardless of merit, can be costly and disruptive to our business operations by diverting attention and energies of management and key technical personnel, and by increasing our costs of doing business. We may not prevail in any such dispute or litigation, and an adverse decision in any legal action involving intellectual property rights, including any such action commenced by us, could limit the scope of our intellectual property rights and the value of the related technology. While we strive to avoid infringing the intellectual property rights of third parties, we cannot provide any assurances that we will be able to avoid any infringement claims.

***We may be subject to alleged infringement claims.***

Our products and technology, including the technology that we license from others, may infringe the intellectual property rights of third parties. Patent applications in the United States and most other countries are confidential for a period of time until they are published, and the publication of discoveries in scientific or patent literature typically lags actual discoveries by several months or more. As a result, the nature of claims contained in unpublished patent filings around the world is unknown to us, and we cannot be certain that we were the first to conceive inventions covered by our patents or patent applications or that we were the first to file patent applications covering such inventions. Furthermore, it is not possible to know in which countries patent holders may choose to extend their filings under the Patent Cooperation Treaty or other mechanisms. In addition, we may be subject to intellectual property infringement claims from individuals, vendors and other companies, including those that are in the business of asserting patents, but are not commercializing products in the field of 3D printing. Any claims that our products or processes infringe the intellectual property rights of others, regardless of the merit or resolution of such claims, could cause us to incur significant costs in responding to, defending and resolving such claims, and may prohibit or otherwise impair our ability to commercialize new or existing products. Any infringement by us or our licensors of the intellectual property rights of third parties may have a material adverse effect on our business, financial condition and results of operations.

Third-party claims of intellectual property infringement successfully asserted against us may require us to redesign infringing technology or enter into costly settlement or license agreements on terms that are unfavorable to us, prevent us from manufacturing or licensing certain of our products, subject us to injunctions restricting our sale of products and use of infringing technology, cause severe disruptions to our operations or the markets in which we compete, impose costly damage awards or require indemnification of our sales agents and end-users. In addition, as a consequence of such claims, we may incur significant costs in acquiring the necessary third-party intellectual property rights for use in our products or developing non-infringing substitute technology. Any of the foregoing developments could seriously harm our business.

***Certain of our employees and patents are subject to the laws of Germany.***

Many of our employees work in Germany and are subject to German employment law. Ideas, developments, discoveries and inventions made by such employees and consultants are subject to the provisions of the German Act on Employees' Inventions (Gesetz über Arbeitnehmererfindungen), which regulates the ownership of, and compensation for, inventions made by employees. We face the risk that disputes can occur between us and our employees or ex-employees pertaining to alleged non-adherence to the provisions of this act that may be costly to defend and take up our management's time and efforts whether we prevail or fail in such dispute. In addition, under the German Act on Employees' Inventions, certain employees retained rights to patents they invented or co-invented prior to 2009. Although most of these employees have subsequently assigned their interest in these patents to us, there is a risk that the compensation we provided to them may be deemed to be insufficient in the future and we may be required under German law to increase the compensation due to such employee for the use of their patent. In those cases where employees have not assigned their interests to us, we may need to pay compensation for the use of those patents. If we are required to pay additional compensation or face other disputes under the German Act on Employees' Inventions, our results of operations could be adversely affected.

***We may be subject to claims that our employees have wrongfully used or disclosed alleged trade secrets of their former employers.***

Certain of our past and present employees were previously employed at other additive manufacturing companies, including our competitors or potential competitors. Some of these employees executed proprietary rights, non-disclosure and non-competition agreements in connection with such previous employment. Although we try to ensure that our employees do not use the proprietary information or know-how of others in their work for us, we may be subject to claims that we or these employees have used or disclosed intellectual property, including trade secrets or other proprietary information, of any such employee's former employer. We are not aware of any threatened or pending claims related to these matters, but in the future litigation may be necessary to defend against such claims. If we fail in defending any such claims, in addition to paying monetary damages, we may lose valuable personnel or intellectual property rights. Even if we are successful in defending against such claims, litigation could result in substantial costs and be a distraction to management.

#### **Risks Related to the Securities Markets and Ownership of Our Common Stock**

***We have broad discretion as to the use of the net proceeds from securities offerings and may not use them effectively.***

We cannot specify with certainty how we may use the net proceeds from securities offerings. Our management has broad discretion in the application of the net proceeds, and we may use these proceeds in ways with which you may disagree or for purposes other than those contemplated at the time of the offering. The failure by our management to apply these funds effectively could have a material adverse effect on our business, financial condition and results of operations. Pending their use, we may invest the net proceeds from a securities offering in a manner that does not produce income or that loses value.

***Sales of a significant number of shares of our common stock in the public markets, or the perception that such sales could occur, could depress the market price of our common stock.***

Sales of a significant number of shares of our common stock in the public markets or utilization of our universal shelf registration statement could depress the market price of our common stock and impair our ability to raise capital through the sale of additional equity securities. We cannot predict the effect that future sales of our common stock, or the market perception that we are permitted to sell a significant number of our securities, would have on the market price of our common stock.

***The market price of our common stock may fluctuate significantly.***

The market price of our common stock has been and is expected to continue to be highly volatile and may be significantly affected by numerous factors, including the risk factors described in this report and other factors which are beyond our control and may not be directly related to our operating performance. These factors include:

- Significant volatility in the market price and trading volume of securities of companies in our sector, which is not necessarily related to the operating performance of these companies;
- Low average daily trading volumes commonly associated with a microcap entity;
- A high level of short interest in our common stock relative to our outstanding public float;
- The mix of products that we sell, and related services that we provide, during any period;
- Delays between our expenditures to develop and market new products and the generation of sales from those products;
- Changes in the amount that we spend to develop, acquire or license new products, technologies or businesses;
- Changes in our expenditures to promote our products and services;
- Changes in the cost of satisfying our warranty obligations and servicing our installed base of systems;
- Success or failure of research and development projects of us or our competitors;
- Announcements of technological innovations, new solutions or enhancements or strategic partnerships or acquisitions by us or one of our competitors;
- The public's response to press releases or other public announcements by us or third parties, including our filings with the SEC;
- The general tendency towards volatility in the market prices of shares of companies that rely on technology and innovation;
- Changes in regulatory policies or tax guidelines;
- Changes or perceived changes in earnings or variations in operating results;
- Any shortfall in revenue or earnings from levels expected by investors or securities analysts;
- Threatened or actual litigation;
- Changes in our senior management; and
- General economic trends and other external factors.

***One of our principal stockholders is able to exert substantial influence in determining the outcome of matters which require the approval of our stockholders.***

Our Chairman, S. Kent Rockwell, beneficially owns approximately 28% of our outstanding shares of common stock. As a holder of 28% of our shares of common stock, Mr. Rockwell may have effective control over the election of our Board of Directors (“Board”) and the direction of our affairs. As a result, he could exert considerable influence over the outcome of any corporate matter submitted to our stockholders for approval, including the election of directors and any transaction that might cause a change in control, such as a merger or acquisition. Any stockholders in favor of a matter that is opposed by Mr. Rockwell would have to obtain a significant number of votes to overrule the votes controlled by Mr. Rockwell.

***If equity research analysts do not publish research or reports about our business, or if they issue unfavorable commentary or downgrade our shares, the price of our shares could decline.***

The trading market for our shares will rely in part on the research and reports that equity research analysts publish about us and our business. We do not have control over these analysts, and we do not have commitments from them to write research reports about us. The price of our shares could decline if one or more equity research analysts downgrades our shares, issues other unfavorable or inaccurate commentary or ceases publishing reports about us or our business.

***The sale of shares by insiders, or even the perception that they may do so, could cause our stock price to decline.***

The price of our shares could decline if there are substantial sales of our common stock, particularly by our directors, their affiliates or our executive officers or when there is a large number of shares of our common stock available for sale. The perception in the public market that our stockholders might sell our shares also could depress the market price of our shares. From time to time, we may conduct offerings of our securities and our executive officers, directors and selling stockholders would be subject to lock-up agreements that restrict their ability to transfer their shares following the offering. The market price of our shares may drop significantly when the restrictions on resale by our existing stockholders lapse and these stockholders are able to sell their shares into the market. If this occurs, it could impair our ability to raise additional capital through the sale of securities, should we desire to do so.

***We incur increased costs as a result of operating as a public company, and our management is required to devote substantial time to compliance initiatives.***

As a public company with shares listed on The Nasdaq Stock Market, we incur significant accounting, legal and other expenses that we would not incur as a private company. Although we now qualify as an SRC pursuant to Rule 12b-2 of the Exchange Act, we still incur significant costs associated with our compliance with the public company reporting requirements of the Exchange Act, requirements imposed by the Sarbanes-Oxley Act (most notably Section 404), the Dodd-Frank Wall Street Reform and Protection Act, and other rules adopted, and to be adopted, by the SEC and The Nasdaq Stock Market. Compliance with these rules and regulations result in increased legal and financial compliance costs and make certain activities more time-consuming and costly. They also make it more difficult for us to obtain director and officer liability insurance, and we incur substantial costs to maintain sufficient coverage.

In addition, changing laws, regulations and standards relating to corporate governance and public disclosure create uncertainty for public companies generally, increasing legal and financial compliance costs and making some activities more time consuming. These laws, regulations and standards are subject to varying interpretations, in many cases due to their lack of specificity and, as a result, their application in practice may evolve over time as new guidance is provided by regulatory and governing bodies. This could result in continuing uncertainty regarding compliance matters and higher costs necessitated by ongoing revisions to disclosure and governance practices. We have invested resources to comply with evolving laws, regulations and standards, and this investment may result in increased general and administrative expenses and a diversion of management’s time and attention from revenue-generating activities to compliance activities. If our efforts to comply with new laws, regulations and standards differ from the activities intended by regulatory or governing bodies due to ambiguities related to their application and practice, regulatory authorities may initiate legal proceedings against us and our business may be adversely affected. We cannot predict or estimate the amount or timing of additional costs we may incur in the future to respond to these constantly evolving requirements. The impact of these requirements could also make it more difficult for us to attract and retain qualified persons to serve on our Board, our Board committees or as executive officers.

***We have never paid cash dividends on our common stock, and we do not anticipate paying any cash dividends on our common stock in the foreseeable future. Therefore, if our share price does not appreciate, our investors may not gain and could potentially lose on their investment in our shares.***

We have never declared or paid cash dividends on our common stock, nor do we anticipate paying any cash dividends on our common stock in the foreseeable future. We currently intend to retain all available funds and any future earnings to fund the development and growth of our business and service and repay indebtedness, if any. As a result, capital appreciation, if any, of our shares will be investors’ sole source of gain for the foreseeable future.

***The right of stockholders to receive liquidation and dividend payments on our common stock is junior to the rights of holders of indebtedness and to any other senior securities we may issue in the future.***

Shares of our common stock are equity interests and do not constitute indebtedness. This means that shares of our common stock will rank junior to all of our indebtedness and to other non-equity claims against us and our assets available to satisfy claims against us, including our liquidation. Additionally, holders of our common stock are subject to the prior dividend and liquidation rights of holders of our outstanding preferred stock, if any. While we currently have no preferred stock outstanding, our Board is authorized to issue classes or series of preferred stock in the future without any action on the part of our common stockholders.

***If we fail to maintain an effective system of internal control over financial reporting in the future, we may not be able to accurately report our financial condition, results of operations or cash flows, which may adversely affect investor confidence in us and, as a result, the value of our common stock.***

The Sarbanes-Oxley Act requires, among other things, that we maintain effective internal controls for financial reporting and disclosure controls and procedures. The term “disclosure controls and procedures,” as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act, means controls and other procedures of a company that are designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the SEC’s rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is accumulated and communicated to the company’s management, including its principal executive and principal financial officers, as appropriate to allow timely decisions regarding required disclosure. We are required under Section 404(a) of the Sarbanes-Oxley Act to furnish a report by management on, among other things, the effectiveness of our internal control over financial reporting. This assessment includes disclosure of any material weaknesses identified by our management in our internal control over financial reporting.

Additionally, Section 404(b) of the Sarbanes-Oxley Act requires an attestation from our independent registered public accounting firm on the effectiveness of our internal control over financial reporting which began with our Annual Report on Form 10-K for the year ended December 31, 2018.

In connection with the preparation of our consolidated financial statements for the year ended December 31, 2019, we concluded that there are material weaknesses in the design and operating effectiveness of our internal control over financial reporting as defined in SEC Regulation S-X. A material weakness is a control deficiency, or combination of deficiencies, in internal control over financial reporting such that there is a reasonable possibility that a material misstatement of annual or interim financial statements will not be prevented or detected on a timely basis.

A description of the identified material weaknesses in internal control over financial reporting is as follows:

- *We did not maintain adequate control over user access rights for a significant information technology system.*
- *We did not maintain adequate control over application changes for a significant information technology system.*
- *We did not maintain adequate control over pricing and discounts associated with sales of certain of our products.*

During the three months ended December 31, 2019, as a result of the identification of the material weaknesses further described above, management has initiated the development of a remediation plan in an effort to ensure that our disclosure controls and procedures are effective. Our remediation plan is expected to include a comprehensive evaluation of the people, processes and systems responsible for each of the underlying control activities. We expect to complete this evaluation in 2020 and put measures in place in an effort to remediate the identified material weaknesses. However, we cannot be certain that the measures we may take will ensure that we establish and maintain adequate controls over our financial processes and reporting in the future or that material weaknesses identified will be remediated.

We documented and evaluated our internal control over financial reporting in order to report on the effectiveness of our internal controls as of December 31, 2019 and, as described in Item 9A, “Controls and Procedures”, management has determined that our internal control over financial reporting was ineffective as of December 31, 2019. Any failure to maintain internal control over financial reporting could severely inhibit our ability to accurately report our financial condition, results of operations or cash flows. If we are unable to conclude that our internal control over financial reporting is effective, or if our independent registered public accounting firm determines we have a material weakness in our internal control over financial reporting, we could lose investor confidence in the accuracy and completeness of our financial reports, the market price of our common stock could decline, investor groups like Institutional Shareholder Services could initiate a withhold vote campaign with respect to the re-election of the members of our audit committee, and we could be subject to sanctions or investigations by The Nasdaq Stock Market, the SEC or other regulatory authorities. Failure to remedy any material weakness in our internal control over financial reporting, or to implement or maintain other effective control systems required of public companies, could also restrict our future access to the capital markets.

Notwithstanding the identified material weaknesses, management believes the consolidated financial statements included in this Annual Report on Form 10-K fairly present in all material respects our financial condition, results of operations and cash flows as of and for the periods presented in accordance with GAAP.

***Provisions in our charter documents or Delaware law may inhibit a takeover or make it more difficult to effect a change in control, which could adversely affect the value of our common stock.***

Our Certificate of Incorporation and Bylaws contain, and Delaware corporate law contains, provisions that could delay or prevent a change of control or changes in our management. These provisions will apply even if some of our stockholders consider the offer to be beneficial or favorable. If a change of control or change in management is delayed or prevented, the market price of our common stock could decline.

***Raising additional capital by issuing securities may cause dilution to our stockholders.***

We may need or desire to raise substantial additional capital in the future. Our future capital requirements will depend on many factors, including, among others:

- Research and development investments;
- Our degree of success in capturing a larger portion of the industrial products production market;
- The costs of establishing or acquiring sales, marketing, and distribution capabilities for our products;
- The costs of preparing, filing, and prosecuting patent applications, maintaining and enforcing our issued patents, and defending intellectual property-related claims;
- The extent to which we acquire or invest in businesses, products or technologies and other strategic relationships; and
- The costs of financing unanticipated working capital requirements and responding to competitive pressures.

If we raise additional funds by issuing equity or convertible debt securities, we may reduce the percentage ownership of our then-existing stockholders, and the holders of those newly-issued equity or convertible debt securities may have rights, preferences, or privileges senior to those possessed by our then-existing stockholders. Additionally, future sales of a substantial number of shares of our common stock or other equity-related securities in the public market could depress the market price of our common stock and impair our ability to raise capital through the sale of additional equity or equity-linked securities. We cannot predict the effect that future sales of our common stock or other equity-related securities would have on the market price of our common stock.

**Item 1B. Unresolved Staff Comments.**

None.

**Item 2. Properties.**

We have the following locations:

| Location                       | Nature of Facility                                                                                     | Owned or Leased       | Approximate Square Footage |
|--------------------------------|--------------------------------------------------------------------------------------------------------|-----------------------|----------------------------|
| <b><i>United States</i></b>    |                                                                                                        |                       |                            |
| North Huntingdon, Pennsylvania | Corporate Headquarters<br>3D Printing Machine Manufacturing<br>EAC<br>3D Printing Machine Sales Center | Owned                 | 67,886                     |
| Troy, Michigan                 | EAC                                                                                                    | Owned                 | 19,646                     |
| St. Clairsville, Ohio          | EAC<br>Materials Research and Development                                                              | Owned                 | 12,800                     |
| <b><i>Europe</i></b>           |                                                                                                        |                       |                            |
| Gersthofen, Germany            | European Headquarters<br>3D Printing Machine Manufacturing<br>EAC<br>3D Printing Machine Sales Center  | Leased <sup>(a)</sup> | 200,585                    |
| <b><i>Asia</i></b>             |                                                                                                        |                       |                            |
| Kanagawa, Japan                | EAC<br>3D Printing Machine Sales Center                                                                | Owned                 | 19,639                     |

(a) On December 10, 2019, ExOne Property GmbH and ExOne GmbH, our German subsidiaries, entered into a purchase agreement (the "Purchase Agreement") with Solidas Immobilien und Grundbesitz GmbH, a private, unaffiliated German real estate investor (the "Buyer"), for the sale of our European headquarters and operating facility in Gersthofen, Germany (the "Facility"). Concurrently with the execution of the Purchase Agreement, ExOne GmbH and the Buyer entered into a rental contract for the leaseback of the Facility. The sale-leaseback transaction closed on February 18, 2020.

**Item 3. Legal Proceedings.**

We are subject to various litigation, claims, and proceedings which have been or may be instituted or asserted from time to time in the ordinary course of business. Management does not believe that the outcome of any pending or threatened matters will have a material adverse effect, individually or in the aggregate, on our financial position, results of operations or cash flows.

**Item 4. Mine Safety Disclosures.**

Not applicable.

## PART II

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

#### Market Information

Our common stock has been listed on The Nasdaq Stock Market since February 7, 2013, under the symbol “XONE.”

#### Stockholders

As of March 1, 2020, there were 33 stockholders of record. The actual number of holders of our common stock is greater than the number of record holders, and includes stockholders who are beneficial owners and whose shares are held in street name by brokers and other nominees. This number of holders of record also does not include stockholders whose shares may be held in trust by other entities.

#### Dividend Policy

We do not anticipate that we will declare or pay regular dividends on our common stock in the foreseeable future, as we generally intend to invest any future earnings in the development and growth of our business. Future dividends, if any, will be at the discretion of our Board and will depend on many factors, including general economic and business conditions, our strategic plans, our financial results and condition, legal requirements, any contractual obligations or limitations, and other factors that our Board deems relevant.

#### Securities Authorized for Issuance Under Equity Compensation Plans

Our 2013 Equity Incentive Plan (the “Plan”) was adopted on January 24, 2013, and approved by our stockholders on August 19, 2013. The table below sets forth information with regard to securities authorized for issuance under the Plan as of December 31, 2019:

| Plan Category                                                 | Number of Securities<br>to be Issued Upon<br>Exercise of<br>Outstanding Options,<br>Warrants and Rights | Weighted-Average<br>Exercise Price of<br>Outstanding Options,<br>Warrants and Rights | Number of Securities<br>Remaining Available for<br>Future Issuance Under<br>Equity Compensation<br>Plans<br>(Excluding Securities<br>Reflected in the<br>First Column) <sup>(a)</sup> |
|---------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Equity Compensation Plans Approved by<br>Security Holders     | 854,259                                                                                                 | \$ 9.34                                                                              | 627,934                                                                                                                                                                               |
| Equity Compensation Plans Not Approved by<br>Security Holders | N/A                                                                                                     | N/A                                                                                  | N/A                                                                                                                                                                                   |

(a) On January 24, 2013, the Board adopted the 2013 Equity Incentive Plan (the “Plan”). In connection with the adoption of the Plan, 500,000 shares of common stock were reserved for issuance pursuant to the Plan, with automatic increases in such reserve available each year annually on January 1 from 2014 through 2023 equal to the lesser of 3.0% of the total outstanding shares of common stock as of December 31 of the immediately preceding year or, a number of shares of common stock determined by the Board, provided that the maximum number of shares authorized under the Plan did not exceed 1,992,241 shares, subject to certain adjustments. The maximum number of shares authorized under the Plan was reached on January 1, 2017. At December 31, 2019, 627,934 shares remained available for future issuances under the Plan.

#### Item 6. Selected Financial Data.

We are an SRC as defined by Rule 12b-2 of the Exchange Act and are not required to provide the information under this item.

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

(dollars in thousands, except per-share amounts)

The following discussion and analysis should be read in conjunction with our consolidated financial statements and related notes thereto in Part II Item 8 of this Annual Report on Form 10-K. Certain statements contained in this discussion may constitute forward looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended (the "Securities Act") and Section 21E of the Exchange Act. These statements involve a number of risks, uncertainties and other factors that could cause actual results to differ materially from those reflected in any forward looking statements, as a result of a variety of risks and uncertainties, including those described under Item 1, "Business – Cautionary Statements Concerning Forward Looking Statements" and Item 1A, "Risk Factors".

### Overview

#### *Our Business*

We are the pioneer and global leader in binder jet 3D printing technology. Since 1995, we've been on a mission to deliver powerful 3D printers that solve our customers' toughest problems and enable world-changing innovations. Our 3D printing systems quickly transform powder materials — including metals, ceramics, composites and sand — into precision parts, metalcasting molds and cores, and innovative tooling solutions. Industrial customers use our technology to save time and money, reduce waste, increase their manufacturing flexibility, and deliver designs and products that were once impossible. As home to the world's leading team of binder jetting experts, we also provide specialized 3D printing services, including on-demand production of mission-critical parts, as well as engineering and design consulting.

#### *Outlook*

We are the global leader in industrial 3D printers utilizing binder jetting technology for non-polymer based materials. Our continued focus is to achieve profitable growth via three strategic initiatives:

- ***Expand Both Our Customer and Application Focus.*** We intend to leverage our substantial experience in binder jetting technology to focus on the highest value industries and applications. We have made a significant investment in our commercial operations to drive our growth in this area.
- ***Extend the Capabilities of Our Core Technology.*** We intend to expand our core binder jetting technology through our machine platforms while at the same time lowering the total cost of ownership of our systems for our customers. We are also focused on driving modularity among our various machine platforms for both direct and indirect applications.
- ***Execute on 3D Printed and Other Products, Materials and Services Revenue Growth.*** We intend to execute on our plan to expand our offerings for 3D printed and other products, materials and services while better leveraging our growing global installed base of 3D printers.

Our results for 2019 were impacted by a downturn in global manufacturing trends which specifically impacted the capital expenditure investments of our customers. During 2019, we introduced two new signature platforms (the X1 25Pro™ for direct applications and the S-MAX Pro™ for indirect applications), with physical deliveries of both systems commencing during the three months ended December 31, 2019. We ended the year with a record backlog balance of approximately \$31,100. We expect the combination of our backlog at December 31, 2019 and an acceleration in market adoption of our newly introduced printer platforms to provide the basis for our growth in 2020 despite certain negative macroeconomic trends for global manufacturing, including the global market impact of the coronavirus disease COVID-19.

On December 10, 2019, ExOne Property GmbH and ExOne GmbH (our "German Subsidiaries"), entered into a purchase agreement (the "Purchase Agreement") with Solidas Immobilien und Grundbesitz GmbH, a private, unaffiliated German real estate investor (the "Buyer"), for the sale of our European headquarters and operating facility in Gersthofen, Germany (the "Facility") for a cash price of €17,000 (approximately \$18,500, of which approximately \$2,200 was received prior to December 31, 2019). Concurrently with the execution of the Purchase Agreement, ExOne GmbH and the Buyer entered into a rental contract (the "Lease") for the leaseback of the Facility for an initial aggregate annual rent totaling €1,500 (approximately \$1,700), plus applicable taxes, which is fixed during the initial three-year term and is subject to adjustment on an annual basis (in accordance with the consumer price index for Germany) during the two five-year option extension periods. The sale-leaseback transaction closed on February 18, 2020.

As a result of the completion of the sale-leaseback transaction further described above, we expect the following effects on our results of operations, financial condition and cash flows:

- As indicated, we expect to incur annual rent expense commencing during the three months ending March 31, 2020 of approximately \$1,700 (with an expected allocation of approximately \$1,300, \$200 and \$200 to cost of sales, research and development and selling, general and administrative expenses, respectively, based on the relative utilization of the Facility). This is in place of annual depreciation associated with the Facility of approximately \$600 (allocated approximately \$400, \$100 and \$100 to cost of sales, research and development and selling, general and administrative expenses, respectively, based on the relative utilization of the Facility).
- We expect to record a gain on sale of property and equipment during the three months ending March 31, 2020 of approximately \$1,400.
- We expect to record a right-of-use asset and corresponding operating lease liability of approximately \$4,500.

### ***Backlog***

At December 31, 2019, our backlog was approximately \$31,100 of which approximately \$27,100 is expected to be fulfilled during the 12 months following such date. At December 31, 2018, our backlog was approximately \$12,300.

### ***Seasonality***

Purchases of our 3D printing machines are often subject to the capital expenditure cycles of our customers. Generally, 3D printing machine sales are higher in our third and fourth fiscal quarters than in our first and second fiscal quarters; however, as acceptance of our 3D printing machines as a credible alternative to traditional methods of production grows, we expect to limit the seasonality we experience.

### ***Financial Measures***

We use several financial and operating metrics to measure our business. We use these metrics to assess the progress of our business, make decisions on where to allocate capital, time and technology investments, and assess longer-term performance within our marketplace. The key metrics are as follows:

***Revenue.*** Our revenue consists of sales of our 3D printing machines and 3D printed and other products, materials and services.

**3D printing machines.** 3D printing machine revenues consist of 3D printing machine sales and leasing arrangements. Sales of 3D printing machines may also include optional equipment and services (installation, training and other services delivered at the time of installation). 3D printing machine sales and leasing arrangements are influenced by a number of factors including, among other things, the adoption rate of our 3D printing technology, end-user product design and manufacturing activity, the capital expenditure budgets of end-users and potential end-users and other macroeconomic factors. Purchases or leases of our 3D printing machines, particularly our higher-end, higher-priced systems, typically involve long sales cycles. Several factors can significantly affect revenue reported for our 3D printing machines for a given period including a customer's capital budgeting cycle, its facility preparedness and the terms of the underlying arrangement with a customer (including certain substantive acceptance provisions) which may vary from period to period.

**3D printed and other products, materials and services.** 3D printed and other products, materials and services consist of sales derived from our global EAC network (including 3D printed components or tools and castings), consumable materials, aftermarket (including replacement parts for the network of 3D printing machines installed by our global customer base and services for maintenance) and certain funded research and development arrangements. Our EACs utilize our 3D printing machine technology to print products to the specifications of customers. In addition, our EACs provide support and services such as pre-production collaboration prior to printing products for a customer. Sales of consumable materials and aftermarket (replacement parts and service maintenance contracts) are directly linked to our growing network of 3D printing machines installed by our global customer base. Funded research and development includes both commercial and government arrangements which generally apply our additive manufacturing technologies (specifically binder jetting) to one or more specific materials or applications.

***Cost of Sales and Gross Profit.*** Our cost of sales consists primarily of direct labor (related to our global workforce), materials (for both the manufacture of 3D printing machines and for our EAC and other manufacturing operations) and overhead to produce 3D printing machines and 3D printed and other products, materials and services. Also included in cost of sales are license fees (based upon a percentage of revenue of qualifying products and processes) for the use of intellectual property, warranty costs and other overhead associated with our production processes.

Our gross profit is influenced by a number of factors, the most important of which is the volume and mix of sales of our 3D printing machines and 3D printed and other products, materials and services.

As 3D printing machine sales are cyclical, we seek to achieve a balance in revenue from 3D printing machines and 3D printed and other products, materials and services in order to maximize gross profit while managing business risk. In addition, we expect to reduce our cost of sales over time by continued research and development and supply chain activities directed towards achieving increased efficiencies in our production processes and lowering total cost of ownership of our 3D printing machines.

***Operating Expenses.*** Our operating expenses consist of research and development expenses and selling, general and administrative expenses.

**Research and development expenses.** Our research and development expenses consist primarily of salaries and related personnel expenses aimed at 3D printing machine development and materials qualification activities. Additional costs include the related software and materials, laboratory supplies, and costs for facilities and equipment (including 3D printing machines used in materials qualification activities). Research and development expenses are charged to operations as they are incurred. We capitalize the cost of materials, equipment and facilities that have future alternative uses in research and development projects or otherwise.

**Selling, general and administrative expenses.** Our selling, general and administrative expenses consist primarily of employee-related costs (salaries and benefits) of our executive officers, sales and marketing (including sales commissions), finance, accounting, information technology and human resources personnel. Other significant general and administrative costs include the facility costs related to our United States and European headquarters and external costs for legal, audit, consulting and other professional services.

**Interest Expense.** Interest expense consists principally of the interest cost associated with our related party revolving credit facility, and outstanding long-term debt.

**(Benefit) Provision for Income Taxes.** We are taxed as a corporation for United States federal, state, local and foreign income tax purposes. Current statutory tax rates in the jurisdictions in which we operate, the United States, Germany, Japan and Italy (through December 2018), are 21%, 30%, 31% and 24%, respectively.

## Results of Operations

### Net Loss

Net loss for 2019 was \$15,095, or \$0.93 per basic and diluted share, compared with a net loss of \$12,667, or \$0.78 per basic and diluted share, for 2018. The increase in our net loss was principally due to a reduction in our revenues and gross profit, as well as the absence of a gain from an insurance recovery recorded during 2018 for a 3D printing machine damaged by a third party freight company while in transit, all of which was offset by a reduction in our research and development and selling, general and administrative expenses (all changes further described below).

### Revenue

The following table summarizes revenue by product group for each of the years ended December 31:

|                                                       | 2019 |        | 2018   |                  |
|-------------------------------------------------------|------|--------|--------|------------------|
| 3D printing machines                                  | \$   | 27,232 | 51.1%  | \$ 36,393 56.3%  |
| 3D printed and other products, materials and services |      | 26,044 | 48.9%  | 28,251 43.7%     |
|                                                       | \$   | 53,276 | 100.0% | \$ 64,644 100.0% |

Revenue for 2019 was \$53,276 compared with revenue of \$64,644 for 2018, a decrease of \$11,368, or 17.6%. The decrease in revenue was attributable to both of our product groups. The decrease in revenues from 3D printing machines resulted from a lower volume of units sold (44 3D printing machines sold during 2019, as compared to 56 3D printing machines sold during 2018) and a lower average selling price of units sold (primarily due to the mix of 3D printing machines sold). The decrease in revenues from 3D printed and other products, materials and services principally resulted from a decrease in revenues from our direct EAC printing operations (mostly due to the timing of orders from a key customer), indirect EAC printing operations (mostly due to lower volumes of printed products and the impact of exiting our Houston, Texas facility in August 2018, such facility contributing \$951 in revenue during 2018) and materials (mostly due to reductions in pricing based on external competition) offset by an increase in aftermarket sales based on an increased global installed base of 3D printing machines and a higher contribution from research and development arrangements primarily due to a new automotive project which commenced during the three months ended December 31, 2019. Revenue was also impacted by approximately \$800 due to unfavorable exchange rates (principally the euro versus the United States dollar) during 2019.

### Cost of Sales and Gross Profit

Cost of sales for 2019 was \$35,848 compared with cost of sales of \$43,703 for 2018, a decrease of \$7,855, or 18.0%. Gross profit for 2019 was \$17,428 compared with gross profit of \$20,941 for 2018. Gross profit percentage was 32.7% for 2019 compared with gross profit percentage of 32.4% for 2018. The decrease in our gross profit was primarily due to a decrease in our volume of products sold resulting in a reduction in leverage of our fixed cost base and net negative experience related to product warranties of \$519. These decreases were offset by cost savings associated with our 2018 global cost realignment program (primarily fixed overhead costs associated with our former Houston, Texas facility). In addition, we realized net benefits in cost of sales relating to a reduction in net charges associated with slow-moving, obsolete and lower of cost or net realizable value inventories of \$730 (principally due to the \$561 charge associated with our industrial microwave inventories recorded during 2018) and amounts associated with exit activities including a gain from disposal of property and equipment of \$145 associated with our former Houston, Texas property recorded during the three months ended December 31, 2019 and the absence of \$236 in exit costs associated with our Desenzano del Garda, Italy and Houston, Texas facility consolidations during 2018.

### ***Research and Development***

Research and development expenses for 2019 were \$9,884 compared with research and development expenses of \$10,744 for 2018, a decrease of \$860, or 8.0%. The decrease in research and development expenses was primarily due to decreases in employee-related costs (principally salaries and benefits) of \$119 and consulting and professional fees of \$715 (both reductions primarily as a result of our 2018 global cost realignment program) and a decrease in equity-based compensation of \$189, including amounts awarded under our annual incentive programs as a result of underperformance against 2019 targets. These decreases were offset by an increase in material costs of \$317, primarily associated with our development of the X1 25Pro™ direct 3D printing machine and S-MAX Pro™ indirect 3D printing machine.

### ***Selling, General and Administrative***

Selling, general and administrative expenses for 2019 were \$22,592 compared with selling, general and administrative expenses of \$23,194 for 2018, a decrease of \$602, or 2.6%. The decrease in selling, general and administrative expenses was principally due to a decrease in employee-related costs (salaries and benefits) of \$1,202 (including \$708 in employee termination costs associated with the change in our Chief Executive Officer and our 2018 global cost realignment program, recorded during the three months ended June 2018) and consulting and professional fees of \$299 (reduction associated with our 2018 global cost realignment program). These decreases were offset by a net increase associated with equity-based compensation of \$419 (principally associated with changes in executive management in May 2019) offset by a reduction in amounts awarded under our annual incentive programs as a result of underperformance against 2019 targets, a net increase in net provisions for bad debts of \$221 and a net increase in selling costs (an increase in sales promotion and trade show expenses offset by lower external commissions on lower sales) of \$354, primarily due to our investment in the GIFA international foundry show in Dusseldorf, Germany in 2019 (a once every four-year event).

### ***Interest Expense***

Interest expense for 2019 was \$343 compared with interest expense of \$254 for 2018, an increase of \$89, or 35.0%. The increase in interest expense was principally due to an increase in interest incurred in connection with our related party revolving credit facility (\$260 in 2019 as compared to \$160 in 2018, primarily due to an increase in borrowings between 2019 and 2018).

### ***Other Expense (Income) — Net***

Other expense (income) — net for 2019 was \$111 compared with other expense (income) — net of (\$744) for 2018. The change of \$855 was primarily due to the absence of \$819 of a realized gain associated with an insurance recovery for a 3D printing machine damaged by a third party freight company while in transit.

### ***(Benefit) Provision for Income Taxes***

The (benefit) provision for income taxes for 2019 and 2018 was (\$407) and \$160, respectively. The effective tax rate for 2019 and 2018 was 2.6% (benefit on a loss) and 1.3% (provision on a loss), respectively. For 2019, the effective tax rate differed from the United States federal statutory rate of 21% primarily due to net changes in valuation allowances and the reversal of previously recorded liabilities for uncertain tax positions (further described below). For 2018, the effective tax rate differed from the United States federal statutory rate of 21% primarily due to net changes in valuation allowances.

We have provided a valuation allowance for certain of our net deferred tax assets as a result of our inability to generate consistent net operating profits in certain jurisdictions in which we operate. As such, certain benefits from deferred taxes in any of the periods presented in our consolidated financial statements have been fully offset by changes in the valuation allowance for net deferred tax assets. We continue to assess our future taxable income by jurisdiction based on our recent historical operating results, the expected timing of reversal of temporary differences, various tax planning strategies that we may be able to enact in future periods, the impact of potential operating changes on our business and our forecast results from operations in future periods based on available information at the end of each reporting period. To the extent that we are able to reach the conclusion that deferred tax assets are realizable based on any combination of the above factors in a single, or multiple, taxing jurisdictions, a reversal of the related portion of our existing valuation allowances may occur.

At December 31, 2018, our ExOne GmbH (2010-2013) and ExOne Property GmbH (2013) subsidiaries were under examination by local taxing authorities in Germany. In January 2019, this examination was concluded by the local taxing authorities in Germany without significant adjustment to previously established tax positions. As a result, during the three months ended March 31, 2019, we recorded a reversal of certain of our previously recorded liabilities for uncertain tax positions of \$1,075, of which \$257 was offset against net operating loss carryforwards.

### ***Restructuring***

In August 2018, we committed to a plan to consolidate certain of our 3D printing operations from our Houston, Texas facility into our Troy, Michigan facility. These actions were taken as part of our efforts to optimize our business model and maximize our facility utilization. During 2018, we recorded a charge of \$28 split between cost of sales (\$15) and selling, general and administrative expense (\$13) associated with involuntary employee terminations related to this plan. During 2018, we recorded an additional charge of \$1 (to cost of sales) associated with asset impairments related to this plan. There are no additional charges expected to be incurred associated with this plan in future periods. We settled all amounts associated with involuntary employee terminations during 2018.

We have estimated a reduction in our annual revenues of approximately \$1,400 as a result of the consolidation of our 3D printing operations from our Houston, Texas facility into our Troy, Michigan facility. Revenues associated with our Houston, Texas facility were \$951 for 2018. We have estimated annualized cost savings related to this consolidation of approximately \$1,800, with approximately \$1,600 in the form of cash cost savings (principally employee-related and other operating costs) and approximately \$200 in the form of reduced depreciation expense. Cost savings estimates associated with the exit of this facility are allocated \$1,600 to cost of sales and \$200 to selling, general and administrative expenses. We have invested realized cost savings associated with this plan into technological or process advancements that support either long-term cost benefits or revenue growth.

In connection with the exit of our Houston, Texas facility, we reclassified \$822 in property and equipment (principally land and building) associated with certain long-lived assets meeting required criteria as held for sale (included in prepaid expenses and other current assets in the accompanying consolidated balance sheet at December 31, 2018). During the three months ended December 31, 2019, we sold this property and equipment to a third party, resulting in net proceeds to us of \$967 and a gain from disposal of property and equipment of \$145 (recorded to cost of sales in the accompanying statement of consolidated operations and comprehensive loss).

In December 2017, we committed to a plan to consolidate certain of our 3D printing operations from our Desenzano del Garda, Italy facility into our Gersthofen, Germany facility. These actions were taken as part of our efforts to optimize our business model and maximize our facility utilization. During 2018, we recorded charges of \$258 associated with other exit costs (\$17) and asset impairments (\$241) related to this plan. In addition, during 2018, we recorded a gain from disposal of property and equipment of \$51 (recorded to cost of sales in the accompanying statement of consolidated operations and comprehensive loss). Charges associated with other exit costs recorded during 2018 were recorded to cost of sales in the accompanying statement of consolidated operations and comprehensive loss. Charges associated with asset impairments recorded during 2018 were recorded to cost of sales as a component of depreciation expense in the accompanying statement of consolidated operations and comprehensive loss. Other exit costs relate to the remaining facility rent due under a non-cancellable operating lease following the cessation of operations at the facility in January 2018. Asset impairment charges relate to certain leasehold improvements associated with the exited facility and other equipment which was abandoned by us. There are no additional charges expected to be incurred associated with this plan in future periods. We settled all amounts associated with involuntary employee terminations and facility rentals during 2018.

The consolidation of our 3D printing operations from our Desenzano del Garda, Italy facility into our Gersthofen, Germany facility did not have a significant impact on our revenues. We have estimated annualized cost savings related to this consolidation of approximately \$875, with approximately \$600 in the form of cash cost savings (principally employee-related and other operating costs) and approximately \$275 in the form of reduced depreciation expense. Cost savings estimates associated with the exit of this facility are allocated \$625 to cost of sales and \$250 to selling, general and administrative expenses. We have invested realized cost savings associated with this plan into technological or process advancements that support either long-term cost benefits or revenue growth.

### ***Impairment***

During the three months ended December 31, 2019, as a result of continued operating losses and cash flow deficiencies, we identified a triggering event requiring a test for the recoverability of long-lived assets held and used at the asset group level. Assessing the recoverability of long-lived assets held and used requires significant judgments and estimates by management.

For purposes of testing long-lived assets for recoverability, we operate as three separate asset groups: United States, Europe and Japan. In assessing the recoverability of long-lived assets held and used, we determined the carrying amount of long-lived assets held and used to be in excess of the estimated future undiscounted net cash flows of the related assets. We proceeded to determine the fair value of our long-lived assets held and used, principally through use of the market approach. Our use of the market approach included consideration of market transactions for comparable assets. Management concluded that the fair value of long-lived assets held and used exceeded their carrying value and, as such, no impairment loss was recorded.

A significant decrease in the market price of a long-lived asset, adverse change in the use or condition of a long-lived asset, adverse change in the business climate or legal or regulatory factors impacting a long-lived asset and continued operating losses and cash flow deficiencies associated with a long-lived asset, among other indicators, could cause a future assessment to be performed which may result in an impairment of long-lived assets held and used, resulting in a material adverse effect on our financial position and results of operations.

### ***Impact of Inflation***

Our results of operations and financial condition are presented based on historical cost. While it is difficult to accurately measure the impact of inflation due to the imprecise nature of the estimates required, we believe the effects of inflation, if any, on our results of operations and financial condition are not significant.

## **Liquidity and Capital Resources**

### ***Liquidity***

We have incurred a net loss in each of our annual periods since our inception. We incurred net losses of \$15,095 and \$12,667 for 2019 and 2018, respectively. At December 31, 2019, we had \$5,265 in unrestricted cash and cash equivalents.

We have received cumulative unrestricted net proceeds from the sale of our common stock (through our initial public offering and subsequent secondary offerings) of \$168,361 to fund our operations.

In March 2018, we entered into a three-year, \$15,000 revolving credit facility with a related party to provide additional funding for working capital and general corporate purposes. At December 31, 2019, there were no amounts outstanding under the related party revolving credit facility. In February 2020, following completion of a sale-leaseback transaction associated with our European headquarters and operating facility in Gersthofen, Germany (further described below), we entered into an amendment to our related party revolving credit facility which reduced the amount available under the related party revolving credit facility to \$10,000 and extended the term of the related party revolving credit facility through March 2024, among other changes.

In June 2018, we initiated the 2018 global cost realignment program focused on a reduction in our production overhead costs and operating expenses in an effort to drive efficiency in our operations and preserve capital. Actions associated with this program were completed in December 2018.

In February 2020, we completed a sale and leaseback of our European headquarters and operating facility in Gersthofen, Germany. This transaction resulted in unrestricted net proceeds to us of approximately \$18,500 (of which approximately \$2,200 was received during 2019) to provide additional funding for working capital and general corporate purposes.

We believe that our existing capital resources will be sufficient to support our operating plan. If we anticipate that our actual results will differ from our operating plan, we believe we have sufficient capabilities to enact cost savings measures to preserve capital. We may also seek to raise additional capital to support our growth through additional debt, equity or other alternatives (including asset sales) or a combination thereof.

### ***Related Party Revolving Credit Facility***

On March 12, 2018, we and our ExOne Americas LLC and ExOne GmbH subsidiaries, as guarantors (collectively, the “Loan Parties”), entered into a Credit Agreement and related ancillary agreements with LBM Holdings, LLC (“LBM”), a company controlled by S. Kent Rockwell, who was our Executive Chairman (a related party) at such date and is currently Chairman of our Board, relating to a \$15,000 revolving credit facility (the “LBM Credit Agreement”) to provide additional funding for working capital and general corporate purposes. The LBM Credit Agreement provided a credit facility for a term of three years (through March 12, 2021) bearing interest at a rate of one month LIBOR plus an applicable margin of 500 basis points (6.8% and 7.5% at December 31, 2019 and 2018, respectively). The LBM Credit Agreement required a commitment fee of 75 basis points, or 0.75%, on the unused portion of the facility, payable monthly in arrears. In addition, an up-front commitment fee of 125 basis points, or 1.25% (\$188), was required at closing. Borrowings under the LBM Credit Agreement were collateralized by the accounts receivable, inventories and machinery and equipment of the Loan Parties. At December 31, 2019 and 2018, the total carrying value of collateral was approximately \$31,000 and \$30,000, respectively. At December 31, 2019 and 2018, the total estimated fair value of collateral significantly exceeded the maximum borrowing capacity under the LBM Credit Agreement. Borrowings under the LBM Credit Agreement are required to be in minimum increments of \$1,000. We may terminate or reduce the credit commitment at any time during the term of the LBM Credit Agreement without penalty. We may also make prepayments against outstanding borrowings under the LBM Credit Agreement at any time without penalty.

The LBM Credit Agreement contains several affirmative covenants including prompt payment of liabilities and taxes; maintenance of insurance, properties, and licenses; and compliance with laws. The LBM Credit Agreement also contains several negative covenants including restricting the incurrence of certain additional debt; prohibiting future liens (other than permitted liens); prohibiting investment in third parties; limiting the ability to pay dividends; limiting mergers, acquisitions, and dispositions; and limiting the sale of certain property and equipment of the Loan Parties. The LBM Credit Agreement does not contain any financial covenants. The LBM Credit Agreement also contains events of default, including, but not limited to, cross-default to certain other debt, breaches of representations and warranties, change of control events and breaches of covenants.

LBM was determined to be a related party based on common control by S. Kent Rockwell. Accordingly, we do not consider the LBM Credit Agreement indicative of a fair market value lending. Prior to execution, the LBM Credit Agreement was reviewed and approved by the Audit Committee of the Board and subsequently by a sub-committee of independent members of the Board. At the time of execution of the LBM Credit Agreement, the \$15,000 in available loan proceeds was deposited into an escrow account with an unrelated, third party financial institution acting as escrow agent pursuant to a separate Escrow Agreement by and among the parties. Loan proceeds held in escrow are available to us upon our submission to the escrow agent of a loan request. Such proceeds will not be available to LBM until payment in-full of the obligations under the LBM Credit Agreement and termination of the LBM Credit Agreement. Payments of principal and other obligations will be made to the escrow agent, while interest payments will be made directly to LBM. Provided there exists no potential default or event of default, the LBM Credit Agreement and Escrow Agreement prohibit any acceleration of repayment of any amount outstanding under the LBM Credit Agreement and prohibit termination of the LBM Credit Agreement or withdrawal from escrow of any unused portion of the available loan proceeds.

During 2019, we had borrowings of \$4,000 under the LBM Credit Agreement, all of which were subsequently repaid prior to December 31, 2019. There were no borrowings by us under the LBM Credit Agreement during 2018.

On February 18, 2020, the Loan Parties and LBM entered into a First Amendment to the LBM Credit Agreement (the “LBM Amendment”) which (i) reduced the available capacity under the revolving credit facility to \$10,000, (ii) extended the term until March 31, 2024, (iii) increased the commitment fee to 100 basis points, or 1.00%, on the unused portion of the revolving credit facility, and (iv) provided a process for the replacement of the LIBOR index after 2021. In addition, the accounts receivable related to our ExOne GmbH subsidiary no longer serve as collateral for borrowings under the LBM Credit Agreement.

We do not consider the amended revolving credit facility with LBM to be indicative of a fair market value lending based on the prior determination of LBM as a related party. Prior to execution, the LBM Amendment was reviewed and approved by the Audit Committee of the Board and subsequently by a sub-committee of independent members of the Board.

#### ***Amendment to GmbH Credit Agreement***

On February 24, 2020, ExOne GmbH entered into an amendment and replacement of its credit agreement with a German bank (the “Amended GmbH Credit Agreement”). The Amended GmbH Credit Agreement eliminates the overdraft credit and short-term loan features of its credit arrangement and replaces them with an increased capacity amount of €3,500 (approximately \$3,800) for the issuance of financial guarantees and letters of credit for commercial transactions requiring security. The cash collateral requirement for the issuance of financial guarantees and letters of credit for commercial transactions requiring security has been eliminated for amounts up to €1,000 (approximately \$1,000) as the amendment provides the German bank with a collateral interest in the accounts receivable of ExOne GmbH. Amounts in excess of €1,000 (approximately \$1,000) continue to require cash collateral.

#### ***Cash Flows***

The following table summarizes the significant components of cash flows for each of the years ended December 31 and our cash, cash equivalents, and restricted cash balances for each of the periods indicated:

|                                                                                | 2019                 | 2018                 |
|--------------------------------------------------------------------------------|----------------------|----------------------|
| Net cash used for operating activities                                         | \$ (5,304)           | \$ (11,775)          |
| Net cash provided by (used for) investing activities                           | 2,520                | (1,229)              |
| Net cash provided by financing activities                                      | 59                   | 105                  |
| Effect of exchange rate changes on cash, cash equivalents, and restricted cash | (172)                | (139)                |
| Net change in cash, cash equivalents, and restricted cash                      | <u>\$ (2,897)</u>    | <u>\$ (13,038)</u>   |
|                                                                                | December 31,<br>2019 | December 31,<br>2018 |
| Cash and cash equivalents                                                      | \$ 5,265             | \$ 7,592             |
| Restricted cash                                                                | 978                  | 1,548                |
| Cash, cash equivalents, and restricted cash                                    | <u>\$ 6,243</u>      | <u>\$ 9,140</u>      |

#### ***Operating Activities***

Net cash used for operating activities for 2019 was \$5,304 compared with net cash used for operating activities of \$11,775 for 2018. The decrease of \$6,471 was due to a net decrease in working capital attributable to an increase in net cash inflows from customers (principally due to the timing of cash collections on 3D printing machine sales) offset by an increase in net cash outflows related to inventory production of our 3D printing machines and the timing of payments to our suppliers and vendors for our production and operating expenses. The net decrease in working capital was partially offset by an increase in our net loss (further described above).

#### ***Investing Activities***

Net cash provided by investing activities for 2019 was \$2,520 compared with net cash used for investing activities of \$1,229 for 2018.

For 2019, net cash provided by investing activities included cash inflows of \$3,186 in proceeds from the sale of property and equipment, including \$967 in proceeds from the sale of our former Houston, Texas facility (further described above) and a deposit of \$2,216 on the sale of our Gersthofen, Germany facility (further described below). These cash inflows were offset by \$666 in cash outflows associated with capital expenditures.

For 2018, net cash used for investing activities included \$1,327 in cash outflows associated with capital expenditures. These cash outflows were offset by cash inflows of \$98 in proceeds from the sale of property and equipment.

We expect our 2020 capital expenditures to be limited to spending associated with sustaining our existing operations and strategic asset acquisition and deployment (estimated spending of approximately \$2,000 to \$3,000).

In February 2020, the Company completed a sale and leaseback of its European headquarters and operating facility in Gersthofen, Germany. This transaction resulted in unrestricted net proceeds to the Company of approximately \$18,500 (of which approximately \$2,200 was received during 2019) to provide additional funding for working capital and general corporate purposes.

### ***Financing Activities***

Net cash provided by financing activities for 2019 was \$59 compared with net cash provided by financing activities of \$105 for 2018.

For 2019, net cash provided by financing activities included \$289 in cash inflows associated with proceeds from the exercise of employee stock options. These cash inflows were offset by cash outflows of \$149 in principal payments on long-term debt and \$68 associated with taxes related to the net settlement of equity-based awards.

For 2018, net cash provided by financing activities included \$529 in cash inflows associated with proceeds from the exercise of employee stock options. These cash inflows were offset by cash outflows of \$265 in debt issuance costs associated with our revolving credit facility with a related party (further described above) and \$142 in principal payments on long-term debt.

At December 31, 2019, we identified that we were not in compliance with the annual cash flow-to-debt service ratio covenant associated with our building note payable (outstanding indebtedness of \$1,384 at December 31, 2019). We requested and were granted a waiver related to compliance with this annual covenant at December 31, 2019 and through December 31, 2020. Related to our 2019 non-compliance, there were no cross-default provisions or related impacts on other lending or financing agreements.

### **Off-Balance Sheet Arrangements**

In the course of our normal operations, our ExOne GmbH subsidiary issues financial guarantees and letters of credit to third parties in connection with certain commercial transactions requiring security. At December 31, 2019, total outstanding financial guarantees and letters of credit issued by us were \$560 (€499) with expiration dates ranging from February 2020 through February 2023. At December 31, 2018, total outstanding guarantees and letters of credit issued by us were \$1,140 (€992).

For further discussion related to financial guarantees and letters of credit issued by us, refer to Note 14 and Note 24 to the consolidated financial statements in Part II Item 8 of this Annual Report on Form 10-K.

### **Recently Issued and Adopted Accounting Guidance**

Refer to Note 1 to the consolidated financial statements included in Part II Item 8 of this Annual Report on Form 10-K.

### **Critical Accounting Policies and Estimates**

Refer to Note 1 to the consolidated financial statements included in Part II Item 8 of this Annual Report on Form 10-K.

### **Item 7A. Quantitative and Qualitative Disclosures About Market Risk.**

We are an SRC as defined by Rule 12b-2 of the Exchange Act and are not required to provide the information under this item.

**Item 8. Financial Statements and Supplementary Data.**

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## Management's Report on Internal Control over Financial Reporting

Management is responsible for establishing and maintaining adequate internal control over financial reporting (as defined in Rule 13a-15(f) under the Exchange Act). Our internal control over financial reporting is designed to provide reasonable assurance to management and the Board of Directors regarding the preparation and fair presentation of published financial statements. Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Therefore, even those systems determined to be effective can provide only reasonable assurance with respect to financial statement preparation and presentation. We conducted an assessment of the effectiveness of our internal control over financial reporting based on the criteria established in *Internal Control – Integrated Framework* issued by the Committee of Sponsoring Organizations (COSO) of the Treadway Commission (2013 Framework). Based on our assessment, as a result of certain material weaknesses in our internal control over financial reporting (further described below), we believe that, as of December 31, 2019, our internal control over financial reporting is ineffective.

In connection with the preparation of our consolidated financial statements for the year ended December 31, 2019, we concluded that there are material weaknesses in the design and operating effectiveness of our internal control over financial reporting as defined in SEC Regulation S-X. A material weakness is a deficiency, or a combination of deficiencies, in internal control over financial reporting such that there is a reasonable possibility that a material misstatement of the annual or interim financial statements will not be prevented or detected on a timely basis.

A description of the identified material weaknesses in internal control over financial reporting is as follows:

- *We did not maintain adequate control over user access rights for a significant information technology system.*
- *We did not maintain adequate control over application changes for a significant information technology system.*
- *We did not maintain adequate control over pricing and discounts associated with sales of certain of our products.*

As a result of the identification of the material weaknesses further described above, management has initiated the development of a remediation plan in an effort to ensure that our disclosure controls and procedures are effective. Our remediation plan is expected to include a comprehensive evaluation of the people, processes and systems responsible for each of the underlying control activities. We expect to complete this evaluation in 2020 and put measures in place in an effort to remediate the identified material weaknesses. However, we cannot be certain that the measures we may take will ensure that we establish and maintain adequate controls over our financial processes and reporting in the future or that material weaknesses identified will be remediated.

Notwithstanding the identified material weaknesses further described above, management believes that the consolidated financial statements and related notes thereto included in this Annual Report on Form 10-K fairly present, in all material respects, our financial condition, results of operations and cash flows for the periods presented.

The effectiveness of internal control over financial reporting as of December 31, 2019 has been audited by Schneider Downs & Co. Inc., an independent registered public accounting firm which also audited our consolidated financial statements. Schneider Downs' attestation reports on the consolidated financial statements and internal control over financial reporting are included under the headings "Report of Independent Registered Public Accounting Firm."

/s/ John F. Hartner

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John F. Hartner  
*Chief Executive Officer*

/s/ Douglas D. Zemba

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Douglas D. Zemba  
*Chief Financial Officer*

## Report of Independent Registered Public Accounting Firm

To the Stockholders and Board of Directors  
of The ExOne Company

### ***Opinion on the Consolidated Financial Statements***

We have audited the accompanying consolidated balance sheets of The ExOne Company and Subsidiaries (collectively, the “Company”) as of December 31, 2019 and 2018, and the related consolidated statements of operations and comprehensive loss, changes in stockholders’ equity, and cash flows for each of the years in the two-year period ended December 31, 2019, and the related notes (collectively referred to as the consolidated financial statements). In our opinion, the consolidated financial statements present fairly, in all material respects, the consolidated financial position of the Company as of December 31, 2019 and 2018, and the results of its consolidated operations and its cash flows for each of the years in the two-year period ended December 31, 2019, in conformity with accounting principles generally accepted in the United States of America.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company’s internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control—Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO), and our report dated March 12, 2020, expressed an adverse opinion.

### ***Basis for Opinion***

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

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the 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.

We have served as the Company’s auditor since 2016.

/s/ Schneider Downs & Co. Inc.

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Schneider Downs & Co. Inc.

Pittsburgh, Pennsylvania  
March 12, 2020

## Report of Independent Registered Public Accounting Firm

To the Stockholders and Board of Directors  
of The ExOne Company

### ***Adverse Opinion on Internal Control over Financial Reporting***

We have audited The ExOne Company and Subsidiaries' (the Company's) internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control—Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). In our opinion, because of the effect of the material weaknesses described in the following paragraph on the achievement of the objectives of the control criteria, the Company has not maintained effective internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control—Integrated Framework (2013)* issued by COSO.

A material weakness is a control deficiency, or a combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of the Company's annual or interim financial statements will not be prevented or detected on a timely basis. The following material weaknesses have been identified and included in management's assessment.

- The Company did not maintain adequate control over:
  - User access rights for a significant information technology system;
  - Application changes for a significant information technology system; and
  - Pricing and discounts associated with sales of certain of the Company's products.

These material weaknesses were considered in determining the nature, timing, and extent of audit tests applied in our audit of the 2019 financial statements, and this report does not affect our report dated March 12, 2020, on those financial statements.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets and the related consolidated statements of operations and comprehensive loss, changes in stockholders' equity, and cash flows of the Company, and our report dated March 12, 2020, expressed an unqualified opinion.

### ***Basis for Opinion***

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

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

### ***Definition and Limitations of Internal Control over Financial Reporting***

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

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

/s/ Schneider Downs & Co. Inc.

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Schneider Downs & Co. Inc.

Pittsburgh, Pennsylvania

March 12, 2020

**The ExOne Company and Subsidiaries**  
**Statement of Consolidated Operations and Comprehensive Loss**  
(in thousands, except per-share amounts)

| For the years ended December 31,            | 2019               | 2018               |
|---------------------------------------------|--------------------|--------------------|
| <b>Revenue</b>                              | \$ 53,276          | \$ 64,644          |
| <b>Cost of sales</b>                        | 35,848             | 43,703             |
| <b>Gross profit</b>                         | 17,428             | 20,941             |
| <b>Operating expenses</b>                   |                    |                    |
| Research and development                    | 9,884              | 10,744             |
| Selling, general and administrative         | 22,592             | 23,194             |
|                                             | 32,476             | 33,938             |
| <b>Loss from operations</b>                 | (15,048)           | (12,997)           |
| <b>Other expense (income)</b>               |                    |                    |
| Interest expense                            | 343                | 254                |
| Other expense (income) – net                | 111                | (744)              |
|                                             | 454                | (490)              |
| <b>Loss before income taxes</b>             | (15,502)           | (12,507)           |
| <b>(Benefit) provision for income taxes</b> | (407)              | 160                |
| <b>Net loss</b>                             | <u>\$ (15,095)</u> | <u>\$ (12,667)</u> |
| <b>Net loss per common share:</b>           |                    |                    |
| Basic                                       | \$ (0.93)          | \$ (0.78)          |
| Diluted                                     | \$ (0.93)          | \$ (0.78)          |
| <b>Comprehensive loss:</b>                  |                    |                    |
| Net loss                                    | \$ (15,095)        | \$ (12,667)        |
| Other comprehensive loss:                   |                    |                    |
| Foreign currency translation adjustments    | (735)              | (1,264)            |
| <b>Comprehensive loss</b>                   | <u>\$ (15,830)</u> | <u>\$ (13,931)</u> |

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

**The ExOne Company and Subsidiaries**  
**Consolidated Balance Sheet**  
(in thousands, except share amounts)

|                                                                                                                                         | 2019             | 2018             |
|-----------------------------------------------------------------------------------------------------------------------------------------|------------------|------------------|
| <b>Assets</b>                                                                                                                           |                  |                  |
| Current assets:                                                                                                                         |                  |                  |
| Cash and cash equivalents                                                                                                               | \$ 5,265         | \$ 7,592         |
| Restricted cash                                                                                                                         | 978              | 1,548            |
| Accounts receivable – net                                                                                                               | 6,522            | 6,393            |
| Current portion of net investment in sales-type leases – net                                                                            | 213              | 302              |
| Inventories – net                                                                                                                       | 19,770           | 15,930           |
| Prepaid expenses and other current assets                                                                                               | 2,182            | 2,438            |
| Total current assets                                                                                                                    | 34,930           | 34,203           |
| Property and equipment – net                                                                                                            | 38,895           | 41,906           |
| Net investment in sales-type leases – net of current portion – net                                                                      | 738              | 1,351            |
| Other noncurrent assets                                                                                                                 | 803              | 222              |
| <b>Total assets</b>                                                                                                                     | <b>\$ 75,366</b> | <b>\$ 77,682</b> |
| <b>Liabilities</b>                                                                                                                      |                  |                  |
| Current liabilities:                                                                                                                    |                  |                  |
| Current portion of long-term debt                                                                                                       | \$ 153           | \$ 144           |
| Accounts payable                                                                                                                        | 5,818            | 4,376            |
| Accrued expenses and other current liabilities                                                                                          | 7,100            | 6,049            |
| Current portion of contract liabilities                                                                                                 | 11,846           | 2,343            |
| Total current liabilities                                                                                                               | 24,917           | 12,912           |
| Long-term debt – net of current portion                                                                                                 | 1,211            | 1,364            |
| Contract liabilities – net of current portion                                                                                           | 286              | 527              |
| Other noncurrent liabilities                                                                                                            | 370              | 104              |
| <b>Total liabilities</b>                                                                                                                | 26,784           | 14,907           |
| Contingencies and commitments                                                                                                           |                  |                  |
| <b>Stockholders' equity</b>                                                                                                             |                  |                  |
| Common stock, \$0.01 par value, 200,000,000 shares authorized,<br>16,346,960 (2019) and 16,234,201 (2018) shares issued and outstanding | 163              | 162              |
| Additional paid-in capital                                                                                                              | 176,850          | 175,214          |
| Accumulated deficit                                                                                                                     | (116,948)        | (101,853)        |
| Accumulated other comprehensive loss                                                                                                    | (11,483)         | (10,748)         |
| <b>Total stockholders' equity</b>                                                                                                       | 48,582           | 62,775           |
| <b>Total liabilities and stockholders' equity</b>                                                                                       | <b>\$ 75,366</b> | <b>\$ 77,682</b> |

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

**The ExOne Company and Subsidiaries**  
**Statement of Consolidated Cash Flows**  
(in thousands)

| For the years ended December 31,                                                                                                        | 2019            | 2018            |
|-----------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------|
| <b>Operating activities</b>                                                                                                             |                 |                 |
| Net loss                                                                                                                                | \$ (15,095)     | \$ (12,667)     |
| Adjustments to reconcile net loss to net cash used for operations:                                                                      |                 |                 |
| Depreciation and amortization                                                                                                           | 4,581           | 5,503           |
| Equity-based compensation                                                                                                               | 1,416           | 968             |
| Amortization of debt issuance costs                                                                                                     | 93              | 75              |
| Provision for bad debts – net                                                                                                           | 279             | 58              |
| Provision for slow-moving, obsolete and lower of cost or net realizable value inventories – net                                         | 292             | 1,022           |
| Gain from disposal of property and equipment – net                                                                                      | (147)           | (51)            |
| Foreign exchange losses on intercompany transactions – net                                                                              | 63              | 68              |
| Deferred income taxes                                                                                                                   | (199)           | —               |
| Changes in assets and liabilities, excluding effects of foreign currency translation adjustments:                                       |                 |                 |
| Decrease in accounts receivable                                                                                                         | 2               | 1,452           |
| Decrease in net investment in sales-type leases                                                                                         | 269             | 185             |
| Increase in inventories                                                                                                                 | (5,713)         | (3,441)         |
| Increase in prepaid expenses and other assets                                                                                           | (632)           | (335)           |
| Increase in accounts payable                                                                                                            | 1,514           | 195             |
| (Decrease) increase in accrued expenses and other liabilities                                                                           | (1,308)         | 181             |
| Increase (decrease) in contract liabilities                                                                                             | 9,281           | (4,988)         |
| <b>Net cash used for operating activities</b>                                                                                           | <b>(5,304)</b>  | <b>(11,775)</b> |
| <b>Investing activities</b>                                                                                                             |                 |                 |
| Capital expenditures                                                                                                                    | (666)           | (1,327)         |
| Proceeds from sale of property and equipment                                                                                            | 3,186           | 98              |
| <b>Net cash provided by (used for) investing activities</b>                                                                             | <b>2,520</b>    | <b>(1,229)</b>  |
| <b>Financing activities</b>                                                                                                             |                 |                 |
| Proceeds from related party revolving credit facility                                                                                   | 4,000           | —               |
| Payments on related party revolving credit facility                                                                                     | (4,000)         | —               |
| Payments on long-term debt                                                                                                              | (149)           | (142)           |
| Proceeds from exercise of employee stock options                                                                                        | 289             | 529             |
| Taxes related to the net share settlement of equity-based awards                                                                        | (68)            | —               |
| Debt issuance costs                                                                                                                     | —               | (265)           |
| Other                                                                                                                                   | (13)            | (17)            |
| <b>Net cash provided by financing activities</b>                                                                                        | <b>59</b>       | <b>105</b>      |
| Effect of exchange rate changes on cash, cash equivalents, and restricted cash                                                          | (172)           | (139)           |
| Net change in cash, cash equivalents, and restricted cash                                                                               | (2,897)         | (13,038)        |
| Cash, cash equivalents, and restricted cash at beginning of period                                                                      | 9,140           | 22,178          |
| Cash, cash equivalents, and restricted cash at end of period                                                                            | <u>\$ 6,243</u> | <u>\$ 9,140</u> |
| <b>Supplemental disclosure of cash flow information</b>                                                                                 |                 |                 |
| Cash paid for interest                                                                                                                  | <u>\$ 222</u>   | <u>\$ 169</u>   |
| Cash paid for income taxes                                                                                                              | <u>\$ 199</u>   | <u>\$ 103</u>   |
| <b>Supplemental disclosure of noncash investing and financing activities</b>                                                            |                 |                 |
| Transfer of internally developed 3D printing machines from inventories to property and equipment for internal use or leasing activities | <u>\$ 2,572</u> | <u>\$ 2,194</u> |
| Transfer of internally developed 3D printing machines from property and equipment to inventories for sale                               | <u>\$ 1,206</u> | <u>\$ 1,042</u> |
| Property and equipment included in accounts payable                                                                                     | <u>\$ 71</u>    | <u>\$ 79</u>    |
| Property and equipment reclassified as assets held for sale                                                                             | <u>\$ —</u>     | <u>\$ 822</u>   |
| Property and equipment acquired through financing arrangements                                                                          | <u>\$ —</u>     | <u>\$ 14</u>    |

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

**The ExOne Company and Subsidiaries**  
**Statement of Changes in Consolidated Stockholders' Equity**  
(in thousands)

|                                                                  | Common stock<br>Shares | \$            | Additional<br>paid-in capital | Accumulated<br>deficit | Accumulated<br>other<br>comprehensive<br>loss | Total<br>stockholders'<br>equity |
|------------------------------------------------------------------|------------------------|---------------|-------------------------------|------------------------|-----------------------------------------------|----------------------------------|
| <b>Balance at December 31, 2017</b>                              | 16,125                 | \$ 161        | \$ 173,718                    | \$ (89,186)            | \$ (9,484)                                    | \$ 75,209                        |
| Net loss                                                         | —                      | —             | —                             | (12,667)               | —                                             | (12,667)                         |
| Other comprehensive loss                                         | —                      | —             | —                             | —                      | (1,573)                                       | (1,573)                          |
| Effect of dissolution of ExOne Italy S.r.l.                      | —                      | —             | —                             | —                      | 309                                           | 309                              |
| Equity-based compensation                                        | —                      | —             | 968                           | —                      | —                                             | 968                              |
| Exercise of employee stock options                               | 67                     | 1             | 528                           | —                      | —                                             | 529                              |
| Common stock issued from equity incentive plan                   | 42                     | —             | —                             | —                      | —                                             | —                                |
| <b>Balance at December 31, 2018</b>                              | <u>16,234</u>          | <u>\$ 162</u> | <u>\$ 175,214</u>             | <u>\$ (101,853)</u>    | <u>\$ (10,748)</u>                            | <u>\$ 62,775</u>                 |
| <b>Balance at December 31, 2018</b>                              | 16,234                 | \$ 162        | \$ 175,214                    | \$ (101,853)           | \$ (10,748)                                   | \$ 62,775                        |
| Net loss                                                         | —                      | —             | —                             | (15,095)               | —                                             | (15,095)                         |
| Other comprehensive loss                                         | —                      | —             | —                             | —                      | (735)                                         | (735)                            |
| Equity-based compensation                                        | —                      | —             | 1,416                         | —                      | —                                             | 1,416                            |
| Exercise of employee stock options                               | 40                     | 1             | 288                           | —                      | —                                             | 289                              |
| Taxes related to the net share settlement of equity-based awards | —                      | —             | (68)                          | —                      | —                                             | (68)                             |
| Common stock issued from equity incentive plan                   | 73                     | —             | —                             | —                      | —                                             | —                                |
| <b>Balance at December 31, 2019</b>                              | <u>16,347</u>          | <u>\$ 163</u> | <u>\$ 176,850</u>             | <u>\$ (116,948)</u>    | <u>\$ (11,483)</u>                            | <u>\$ 48,582</u>                 |

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

**The ExOne Company and Subsidiaries**  
**Notes to the Consolidated Financial Statements**  
**(dollars in thousands, except per-share, share and unit amounts)**

**Note 1. Summary of Significant Accounting Policies**

***Organization***

The ExOne Company (“ExOne”) is a corporation organized under the laws of the state of Delaware. ExOne was formed on January 1, 2013, when The Ex One Company, LLC, a Delaware limited liability company, merged with and into a Delaware corporation, which survived and changed its name to The ExOne Company (the “Reorganization”). As a result of the Reorganization, The Ex One Company, LLC became ExOne, the common and preferred interest holders of The Ex One Company, LLC became holders of common stock and preferred stock, respectively, of ExOne and the subsidiaries of The Ex One Company, LLC became the subsidiaries of ExOne. The consolidated financial statements include the accounts of ExOne and its wholly-owned subsidiaries, ExOne Americas LLC (United States); ExOne GmbH (Germany); ExOne Property GmbH (Germany); ExOne KK (Japan); and through December 2018, ExOne Italy S.r.l. (Italy). Collectively, the consolidated group is referred to as the “Company”.

On December 28, 2018, the Company completed a dissolution of its ExOne Italy S.r.l. (Italy) subsidiary. The purpose of this dissolution was to further simplify the Company’s legal structure. There were no significant tax-related impacts associated with the dissolution of this subsidiary. Refer to Note 3 for further discussion related to certain foreign exchange impacts associated with the dissolution of ExOne Italy S.r.l (Italy).

The Company filed a registration statement on Form S-3 (No. 333-223690) with the Securities and Exchange Commission (“SEC”) on March 15, 2018. The purpose of the Form S-3 was to register, among other securities, debt securities. Subsidiaries of the Company are co-registrants with the Company (“Subsidiary Guarantors”), and the registration statement registered guarantees of debt securities by one or more of the Subsidiary Guarantors. The Subsidiary Guarantors are 100% owned by the Company and any guarantees by the Subsidiary Guarantors will be full and unconditional. There have been no transactions undertaken subject to the Form S-3 since its initial filing.

***Basis of Presentation***

The consolidated financial statements of the Company are prepared in conformity with accounting principles generally accepted in the United States of America (“GAAP”). All material intercompany transactions and balances have been eliminated in consolidation.

Certain amounts relating to contract liabilities – net of current portion (\$527) in the accompanying consolidated balance sheet at December 31, 2018, have been reclassified from other noncurrent liabilities to conform to current period presentation, following the adoption of Financial Accounting Standards Board (“FASB”) Accounting Standards Update (“ASU”) 2014-09 (further described below).

Certain amounts relating to the lessor current portion of net investment in sales-type leases (\$302) and lessor net investment in sales-type leases – net of current portion (\$1,351) in the accompanying consolidated balance sheet at December 31, 2018, have been reclassified from accounts receivable and other noncurrent assets, respectively, to conform to current period presentation following the adoption of FASB ASU 2016-02 (further described below).

Related to the reclassifications further described above, amounts within the statement of consolidated cash flows for the year ended December 31, 2018 associated with these changes have also been reclassified to conform to current period presentation.

Certain amounts relating to foreign exchange losses on intercompany transactions – net, for 2018 (\$68) in the accompanying statement of consolidated cash flows have been reclassified from effect of exchange rate changes on cash, cash equivalents, and restricted cash, to conform to current period presentation.

***Use of Estimates***

The preparation of these consolidated financial statements requires the Company to make certain judgments, estimates and assumptions regarding uncertainties that affect the reported amounts of assets, liabilities, revenue and expenses and related disclosure of contingent assets and liabilities. Areas that require significant judgments, estimates and assumptions include accounting for accounts receivable (including the allowance for doubtful accounts); inventories (including the allowance for slow-moving and obsolete inventories); product warranty reserves; contingencies; income taxes (including the valuation allowance on certain deferred tax assets and liabilities for uncertain tax positions); equity-based compensation (including the valuation of certain equity-based compensation awards issued by the Company); and testing for impairment of long-lived assets (including the identification of asset groups by management, estimates of future cash flows of identified asset groups and fair value estimates used in connection with assessing the valuation of identified asset groups). The Company bases its estimates on historical experience and on various other assumptions that are believed to be reasonable, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. Actual results may differ from these estimates.

### ***Foreign Currency***

The local currency is the functional currency for significant operations outside of the United States. The determination of the functional currency of an operation is made based upon the appropriate economic and management indicators.

Foreign currency assets and liabilities are translated into their United States dollar equivalents based upon year end exchange rates, and are included in stockholders' equity as a component of other comprehensive income (loss). Revenues and expenses are translated at average exchange rates. Transaction gains and losses that arise from exchange rate fluctuations are charged to operations as incurred, except for gains and losses associated with certain long-term intercompany transactions between subsidiaries for which settlement is not planned or anticipated in the foreseeable future, which are included in other comprehensive income (loss) in the accompanying statement of consolidated operations and comprehensive loss.

The Company transacts business globally and is subject to risks associated with fluctuating foreign exchange rates. For 2019 and 2018, 60.8% and 54.3% of the consolidated revenue of the Company was derived from transactions outside the United States, respectively. This revenue is generated primarily from wholly-owned subsidiaries operating in their respective countries and surrounding geographic areas. This revenue is primarily denominated in each subsidiary's local functional currency, including the euro and Japanese yen.

### ***Cash, Cash Equivalents, and Restricted Cash***

The Company considers all highly liquid instruments with maturities when purchased of three months or less to be cash equivalents. The Company's policy is to invest cash in excess of short-term operating and debt-service requirements in such cash equivalents. These instruments are stated at cost, which approximates fair value because of the short maturity of the instruments. The Company maintains cash balances with financial institutions located in the United States, Germany and Japan. The Company places its cash with high quality financial institutions and believes its risk of loss is limited; however, at times, account balances may exceed international and federally insured limits. The Company has not experienced any losses associated with these cash balances.

Restricted cash includes any cash balance held by the Company subject to restriction on withdrawal or use.

### ***Inventories***

The Company values all of its inventories at the lower of cost, as determined on the first-in, first-out method or net realizable value. Overhead is allocated to work in process and finished goods based upon normal capacity of the Company's production facilities. Fixed overhead associated with production facilities that are being operated below normal capacity are recognized as a period expense rather than being capitalized as a product cost. An allowance for slow-moving and obsolete inventories is provided based on historical consumption experience, anticipated product demand and product design changes. These provisions reduce the cost basis of the respective inventories and are recorded as a charge to cost of sales.

### ***Property and Equipment***

Property and equipment are recorded at cost and depreciated on a straight-line basis over the estimated useful lives of the related assets, generally three to forty years. Leasehold improvements are amortized on a straight-line basis over the shorter of their estimated useful lives or the estimated or contractual lives of the related leases. Gains or losses from the sale of assets are recognized upon disposal or retirement of the related assets. Repairs and maintenance are charged to expense as incurred.

The Company evaluates long-lived assets held and used for impairment whenever events or changes in circumstances indicate that the carrying amount of such assets (asset group) may not be recoverable. Recoverability of assets is determined by comparing the estimated undiscounted net cash flows of the operations related to the assets (asset group) to their carrying amount. An impairment loss would be recognized when the carrying amount of the assets (asset group) exceeds the estimated undiscounted net cash flows. The amount of the impairment loss to be recorded is calculated as the excess of carrying value of assets (asset group) over their fair value. The determination of what constitutes an asset group, the associated undiscounted net cash flows, the fair value of assets (asset group) and the estimated useful lives of assets require significant judgments and estimates by management. No impairment loss related to held and used assets was recorded by the Company during 2019 or 2018.

The Company evaluates long-lived assets held for sale for impairment when the associated long-lived asset (asset group) is first determined to meet the held for sale criteria and in each reporting period thereafter until a disposal is executed or a change in plan occurs. A long-lived asset (asset group) is first determined to meet the held for sale criteria when: management, having the authority to approve the action, commits to a plan to sell the long-lived asset (asset group); the long-lived asset (asset group) is available for immediate sale in its present condition subject only to terms that are usual and customary for sales of such long-lived assets (asset groups); an active program to locate a buyer and other actions required to complete the plan to sell the long-lived asset (asset group) have been initiated; the sale of the long-lived asset (asset group) is probable, and transfer of the long-lived asset (asset group) is expected to qualify for recognition as a completed sale, within one year; the long-lived asset (asset group) is being actively marketed for sale at a price that is reasonable in relation to its current fair value; and actions required to complete the plan indicate that it is unlikely that significant changes to the plan will be made or that the plan will be withdrawn.

## ***Income Taxes***

The provision for income taxes is determined using the asset and liability approach of accounting for income taxes. Under this approach, the provision for income taxes represents income taxes paid or payable (or received or receivable) for the current year plus the change in deferred taxes during the year. Deferred taxes represent the future tax consequences expected to occur when the reported amounts of assets and liabilities are recovered or paid and result from differences between the financial and tax bases of assets and liabilities and are adjusted for changes in tax rates and tax laws when enacted. Valuation allowances are established when necessary to reduce deferred tax assets to the amount expected to be realized.

The Company's foreign subsidiaries are taxed as corporations under the taxing regulations of those respective countries. As a result, the accompanying statement of consolidated operations and comprehensive loss includes a provision for income taxes related to these foreign jurisdictions. Any undistributed earnings are intended to be permanently reinvested in the respective subsidiaries, with the exception of ExOne Property GmbH. The deferred taxes on the outside basis difference of the Company's investment in ExOne Property GmbH were not significant at December 31, 2019.

The Company recognizes the income tax benefit from an uncertain tax position only if it is more likely than not that the income tax position will be sustained on examination by the taxing authorities based upon the technical merits of the position. The income tax benefits recognized in the consolidated financial statements from such positions are then measured based upon the largest amount that has a greater than 50% likelihood of being realized upon settlement. Income tax benefits that do not meet the more likely than not criteria are recognized when effectively settled, which generally means that the statute of limitations has expired or that the appropriate taxing authority has completed its examination even though the statute of limitations remains open. Interest and penalties related to uncertain tax positions are recognized as part of the provision for income taxes and are accrued beginning in the period that such interest and penalties would be applicable under relevant tax law until such time that the related income tax benefits are recognized.

## ***Taxes on Revenue Producing Transactions***

Taxes assessed by governmental authorities on revenue producing transactions, including sales, excise, value added and use taxes, are recorded on a net basis (excluded from revenue) in the accompanying statement of consolidated operations and comprehensive loss.

## ***Research and Development***

The Company is involved in research and development of new methods and technologies relating to its products. Research and development expenses are charged to operations as they are incurred. The Company capitalizes the cost of certain materials, equipment and facilities that have alternative future uses in research and development projects or otherwise.

## ***Advertising***

Advertising costs are charged to expense as incurred, and were not significant for 2019 or 2018.

## ***Defined Contribution Plan***

The Company sponsors a defined contribution savings plan under section 401(k) of the Internal Revenue Code. Under the plan, participating employees in the United States may elect to defer a portion of their pre-tax earnings, up to the Internal Revenue Service's annual contribution limit. During 2019 and 2018, the Company made discretionary matching contributions of 50% of the first 8% of employee contributions, subject to certain Internal Revenue Service limitations. Discretionary matching contributions made by the Company during 2019 and 2018 were \$304 and \$320, respectively.

## ***Equity-Based Compensation***

The Company recognizes compensation expense for equity-based grants using the straight-line attribution method in which the expense is recognized ratably over the requisite service period based on the grant date fair value of the related award. Forfeitures of pre-vesting equity-based grants are recognized as they are incurred and result in an offset to equity-based compensation expense in the period of recognition. Fair value of equity-based awards is estimated on the date of grant using the Black-Scholes option pricing model.

## ***Recently Adopted Accounting Guidance***

On January 1, 2019, the Company adopted FASB ASU 2014-09, "Revenue from Contracts with Customers." This ASU created a comprehensive framework for all entities in all industries to apply in the determination of when to recognize revenue and, therefore, supersedes virtually all existing revenue recognition requirements and guidance. This framework is expected to provide a consistent and comparable methodology for revenue recognition. The core principle of the guidance is that an entity should recognize revenue to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. To achieve this principle, an entity should apply the following steps: identify the contract(s) with a customer, identify the performance obligations in the contract(s), determine the transaction price, allocate the transaction price to the performance obligations in the contract(s), and recognize revenue when, or as, the entity satisfies a performance obligation. The Company adopted this guidance using the modified retrospective approach. Revenue from the Company's sale of three-dimensional ("3D") printing machines and 3D printed and other products, materials and services continues to generally be recognized when the related machines, products or materials are delivered or accepted by the Company's customers or as the related services are performed by the Company. As such, the adoption of this guidance did not have a material impact on the Company's financial position or results of operations. The Company has included the enhanced disclosures required by this guidance in its consolidated financial statements (Note 5).

On January 1, 2019, the Company adopted FASB ASU 2016-02, “Leases.” This ASU requires lessees to recognize a right-of-use asset and lease liability on the consolidated balance sheet for leases classified as operating leases. For leases with a term of twelve months or less, a lessee is permitted to make an accounting policy election by class of underlying asset not to recognize a right-of-use asset and lease liability. Additionally, when measuring assets and liabilities arising from a lease, optional payments should be included only if the lessee is reasonably certain to exercise an option to extend the lease, exercise a purchase option, or not exercise an option to terminate the lease. A right-of-use asset represents an entity’s right to use the underlying asset for the lease term, and a lease liability represents an entity’s obligation to make lease payments. Previously, an asset and liability only were recorded for leases classified as capital leases (financing leases). The measurement, recognition, and presentation of expenses and cash flows arising from leases by a lessee remains the same. In connection with the adoption of this guidance, the Company has completed an assessment resulting in an accumulation of all of its leasing arrangements and has validated the information for accuracy and completeness. Upon adoption of the new lease guidance, management recorded a right-of-use asset and lease liability, each in the amount of approximately \$400, on the Company’s consolidated balance sheet for various types of operating leases, including certain machinery and other equipment and vehicles. This amount is equivalent to the aggregate future minimum lease payments on a discounted basis. The Company has also elected to apply the package of transitional practical expedients of the new lease guidance by allowing the Company to not: (1) reassess if expired or existing contracts are, or contain, leases; (2) reassess lease classification for any expired or existing leases; and (3) reassess initial direct costs for any existing leases. Additionally, in July 2018, the FASB issued guidance to provide for an additional transition method to the new lease guidance, whereby an entity can choose to not reflect the impact of the new lease guidance in the prior periods included in its consolidated financial statements. The Company has utilized this additional transition method in connection with its adoption on January 1, 2019. The Company has included the enhanced disclosures required by this guidance in its consolidated financial statements (Note 13).

On January 1, 2019, the Company adopted FASB ASU 2016-15, “Statement of Cash Flows: Classification of Certain Cash Receipts and Cash Payments.” This ASU is intended to reduce diversity in practice in how certain cash receipts and payments are presented and classified in the statement of consolidated cash flows. The standard provides guidance in a number of situations including, among others, settlement of zero-coupon bonds, contingent consideration payments made after a business combination, proceeds from the settlement of insurance claims, and distributions received from equity method investees. The ASU also provides guidance for classifying cash receipts and payments that have aspects of more than one class of cash flows. The adoption of this ASU did not have an effect on the consolidated financial statements of the Company.

#### ***Recently Issued Accounting Guidance***

The Company considers the applicability and impact of all ASUs issued by the FASB. Recently issued ASUs not listed below either were assessed and determined to be not applicable or are currently expected to have no impact on the consolidated financial statements of the Company.

In June 2016, the FASB issued ASU 2016-13, “Financial Instruments – Credit Losses.” This ASU added a new impairment model (known as the current expected credit loss (“CECL”) model) that is based on expected losses rather than incurred losses. Under the new guidance, an entity recognizes as an allowance its estimate of expected credit losses. The CECL model applies to most debt instruments, trade receivables, lease receivables, financial guarantee contracts, and other loan commitments. The CECL model does not have a minimum threshold for recognition of impairment losses and entities will need to measure expected credit losses on assets that have a low risk of loss. As a smaller reporting company pursuant to Rule 12b-2 of the Securities Exchange Act of 1934, as amended, these changes become effective for the Company on January 1, 2023. Management is currently evaluating the potential impact of these changes on the consolidated financial statements of the Company.

#### **Note 2. Liquidity**

The Company has incurred a net loss in each of its annual periods since its inception. As shown in the accompanying statement of consolidated operations and comprehensive loss, the Company incurred a net loss of \$15,095 and \$12,667 for 2019 and 2018, respectively. At December 31, 2019, the Company had \$5,265 in unrestricted cash and cash equivalents.

Since its inception, the Company has received cumulative unrestricted net proceeds from the sale of its common stock (through its initial public offering and subsequent secondary offerings) of \$168,361 to fund its operations.

In March 2018, the Company entered into a three-year, \$15,000 revolving credit facility with a related party (Note 15) to provide additional funding for working capital and general corporate purposes. At December 31, 2019, there were no amounts outstanding under the related party revolving credit facility. In February 2020, following completion of a sale-leaseback transaction associated with the Company’s European headquarters and operating facility in Gersthofen, Germany (further described below), the Company entered into an amendment to its related party revolving credit facility agreement (Note 24) which reduced the amount available under the related party revolving credit facility to \$10,000 and extended the term of the related party revolving credit facility through March 2024, among other changes.

In June 2018, the Company initiated the 2018 global cost realignment program focused on a reduction in the Company's production overhead costs and operating expenses in an effort to drive efficiency in its operations and preserve capital. Actions associated with this program were completed in December 2018.

In February 2020, the Company completed a sale and leaseback of its European headquarters and operating facility in Gersthofen, Germany (Note 24). This transaction resulted in unrestricted net proceeds to the Company of approximately \$18,500 (of which approximately \$2,200 was received during 2019) to provide additional funding for working capital and general corporate purposes.

Management believes that the Company's existing capital resources will be sufficient to support the Company's operating plan. If management anticipates that the Company's actual results will differ from its operating plan, management believes it has sufficient capabilities to enact cost savings measures to preserve capital. The Company may also seek to raise additional capital to support its growth through additional debt, equity or other alternatives (including asset sales) or a combination thereof.

### Note 3. Accumulated Other Comprehensive Loss

The following table summarizes changes in the components of accumulated other comprehensive loss for the periods indicated:

| For the years ended December 31,                               | 2019               | 2018               |
|----------------------------------------------------------------|--------------------|--------------------|
| <b>Foreign currency translation adjustments</b>                |                    |                    |
| Balance at beginning of period                                 | \$ (10,748)        | \$ (9,484)         |
| Other comprehensive loss before reclassifications              | (735)              | (1,573)            |
| Amounts reclassified from accumulated other comprehensive loss | —                  | 309                |
| Balance at end of period                                       | <u>\$ (11,483)</u> | <u>\$ (10,748)</u> |

Foreign currency translation adjustments consist of the effect of translation of functional currency financial statements (denominated in the euro and Japanese yen) to the reporting currency of the Company (United States dollar) and certain long-term intercompany transactions between subsidiaries for which settlement is not planned or anticipated in the foreseeable future. For 2018, foreign currency translation adjustments also included \$245 in a foreign exchange loss recognized in connection with the settlement of an intercompany note payable with ExOne Italy S.r.l. previously identified as a long-term investment in the subsidiary (Note 1) and \$64 associated with the dissolution of the related subsidiary (both amounts recognized in other (income) expense – net in the accompanying statement of consolidated operations and comprehensive loss). There were no tax impacts associated with such reclassifications.

Other than the amounts identified above, no amounts were reclassified to earnings for any of the periods presented. There were no tax impacts related to income tax rate changes for any of the periods presented.

### Note 4. Loss Per Share

The Company presents basic and diluted loss per common share amounts. Basic loss per common share is calculated by dividing net loss available to common stockholders by the weighted average number of common shares outstanding during the applicable period. Diluted loss per share is calculated by dividing net loss available to common stockholders by the weighted average number of common shares and common equivalent shares outstanding during the applicable period.

As the Company incurred a net loss during 2019 and 2018, basic average common shares outstanding and diluted average common shares outstanding were the same because the effect of potential shares of common stock, including stock options (854,259 — 2019 and 621,986 — 2018) and unvested restricted stock issued (66,513 — 2019 and 67,001 — 2018), was anti-dilutive.

The information used to compute basic and diluted net loss per common share was as follows for the periods indicated:

| For the years ended December 31,                        | 2019        | 2018        |
|---------------------------------------------------------|-------------|-------------|
| Net loss                                                | \$ (15,095) | \$ (12,667) |
| Weighted average shares outstanding (basic and diluted) | 16,309,259  | 16,176,415  |
| Net loss per common share:                              |             |             |
| Basic                                                   | \$ (0.93)   | \$ (0.78)   |
| Diluted                                                 | \$ (0.93)   | \$ (0.78)   |

## Note 5. Revenue

The Company derives revenue from the sale of 3D printing machines and 3D printed and other products, materials and services. Revenue is recognized when the Company satisfies its performance obligation(s) under a contract (either implicit or explicit) by transferring the promised product or service to a customer either when (or as) the customer obtains control of the product or service. A performance obligation is a promise in a contract to transfer a distinct product or service to a customer. A contract's transaction price is allocated to each distinct performance obligation.

Revenue is measured as the amount of consideration the Company expects to receive in exchange for transferring products or providing services. As such, revenue is recorded net of returns, allowances, customer discounts, and incentives. Sales, value add, and other taxes collected from customers and remitted to governmental authorities are accounted for on a net (excluded from revenue) basis. Shipping and handling costs are included in cost of sales.

Certain of the Company's contracts with customers provide for multiple performance obligations. Sales of 3D printing machines may also include optional equipment, materials, replacement components and services (installation, training and other services, including maintenance services and/or an extended warranty). Certain other contracts have a single performance obligation, as the promise to transfer products or services is not separately identifiable from other promises in the contract and, therefore, not distinct. For contracts with multiple performance obligations, the Company allocates the contract's transaction price to each performance obligation using the Company's best estimate of stand-alone selling price for each distinct product or service in the contract, which is generally based on an observable price.

The Company's revenue from products is transferred to customers at a point in time. The Company's contracts for 3D printing machines generally include substantive customer acceptance provisions. Revenue under these contracts is recognized when customer acceptance provisions have been satisfied. For all other product sales, the Company recognizes revenue at the point in time in which the customer obtains control of the product, which is generally when product title passes to the customer upon delivery. In limited cases, title does not transfer and revenue is not recognized until the customer has received the products at its physical location.

The Company's revenue from service arrangements includes deferred maintenance contracts and extended warranties that can be purchased at the customer's option. The Company generally provides a standard one-year warranty on the Company's 3D printing machines, which is considered an assurance type warranty, and not considered a separate performance obligation (Note 12). Revenue associated with deferred maintenance contracts is generally recognized at a point in time when the related services are performed where sufficient historical evidence indicates that the costs of performing the related services under the contract are not incurred on a straight-line basis, with such revenue recognized in proportion to the costs expected to be incurred. Revenue associated with extended warranties is generally recognized over time on a straight-line basis over the related contract period.

The Company's revenue from service arrangements includes contracts with the federal government under fixed-fee, cost reimbursable and time and materials arrangements (certain of which may have periods of performance greater than one year). Revenue under these contracts is generally recognized over time using an input measure based upon labor hours incurred and provisional rates provided under the contracts. As such, the nature of these contracts may give rise to variable consideration, primarily based upon completion of the Company's annual Incurred Cost Submission filing as required by the federal government. Historically, amounts associated with variable consideration have not been significant.

The Company's revenue from service arrangements includes certain research and development services. Revenue under research and development service contracts is generally recognized over time using an output measure, specifically units or parts delivered, based upon certain customer acceptance and delivery requirements. Revenue recognized over time using an output measure is not significant.

The following table summarizes the Company's revenue by product group for the periods indicated:

| For the years ended December 31,                      | 2019             | 2018             |
|-------------------------------------------------------|------------------|------------------|
| 3D printing machines                                  | \$ 27,232        | \$ 36,393        |
| 3D printed and other products, materials and services | 26,044           | 28,251           |
|                                                       | <u>\$ 53,276</u> | <u>\$ 64,644</u> |

Revenue from 3D printing machines includes leasing revenue whereby the Company is the lessor of 3D printing machines to its customers. Leasing revenue is accounted for under ASU 2016-02 (Note 13).

The timing of revenue recognition, billings and cash collections results in billed receivables, unbilled receivables (contract assets) and deferred revenue and customer prepayments (contract liabilities) in the accompanying condensed consolidated balance sheet. The Company considers a number of factors in its evaluation of the creditworthiness of its customers, including past due amounts, past payment history, and current economic conditions. For 3D printing machines, the Company's terms of sale vary by transaction. To reduce credit risk in connection with 3D printing machine sales, the Company may, depending upon the circumstances, require customers to furnish letters of credit or bank guarantees or to provide advanced payment (either partial or in full). For 3D printed and other products and materials, the Company's terms of sale generally require payment within 30 to 60 days after delivery, although the Company also recognizes that longer payment periods are customary in certain countries where it transacts business. Service arrangements are generally billed in accordance with specific contract terms and are typically billed in advance or in proportion to performance of the related services. There were no other significant changes in contract liabilities during 2019. Contract assets are not significant.

The Company recognized revenue of \$1,802 related to contract liabilities at January 1, 2019. The difference between recognized revenue and the current portion of contract liabilities at December 31, 2018 is principally due to a customer prepayment of approximately \$400 received prior to December 31, 2018 for a 3D printing machine sale the Company expected to complete during 2019. This 3D printing machine sale is now expected to be completed during 2020.

At December 31, 2019, the Company had approximately \$31,100 of remaining performance obligations (including contract liabilities), which is also referred to as backlog, of which approximately \$27,100 was expected to be fulfilled during the twelve months following such date.

The Company has elected to apply the practical expedient associated with incremental costs of obtaining a contract, and as such, sales commission expense is generally expensed when incurred because the amortization period would be one year or less. These costs are recorded within selling, general and administrative expenses.

Accounts receivable and net investment in sales-type leases (Note 13) are reported at their net realizable value. The Company carries its investment in sales-type leases based on discounting the minimum lease payments by the interest rate implicit in the lease and less an allowance for doubtful accounts. The Company's estimate of the allowance for doubtful accounts related to accounts receivable and net investment in sales-type leases is based on the Company's evaluation of customer accounts with past-due outstanding balances or specific accounts for which it has information that the customer may be unable to meet its financial obligations. Based upon review of these accounts, and management's analysis and judgment, the Company records a specific allowance for that customer's accounts receivable or net investment in sales-type lease balance to reduce the outstanding balance to the amount expected to be collected. The allowance is re-evaluated and adjusted periodically as additional information is received that impacts the allowance amount reserved. At December 31, 2019 and 2018, the allowance for doubtful accounts was \$508 and \$225, respectively. During 2019 and 2018, the Company recorded net provisions for bad debts of \$279 and \$58, respectively.

## **Note 6. Restructuring**

### ***Houston, Texas***

In August 2018, the Company committed to a plan to consolidate certain of its 3D printing operations from its Houston, Texas facility into its Troy, Michigan facility. These actions were taken as part of the Company's efforts to optimize its business model and maximize its facility utilization. During 2018, the Company recorded a charge of \$28 split between cost of sales (\$15) and selling, general and administrative expense (\$13) associated with involuntary employee terminations related to this plan. During 2018, the Company recorded an additional charge of \$1 (to cost of sales) associated with asset impairments related to this plan. There are no additional charges expected to be incurred associated with this plan in future periods. The Company settled all amounts associated with involuntary employee terminations during 2018.

In connection with the Company's exit of its Houston, Texas facility, the Company reclassified \$822 in property and equipment (principally land and building) associated with certain long-lived assets meeting required criteria as held for sale (included in prepaid expenses and other current assets in the accompanying consolidated balance sheet at December 31, 2018). During the three months ended December 31, 2019, the Company sold this property and equipment to a third party, resulting in net proceeds to the Company of \$967 and a gain from disposal of property and equipment of \$145 (recorded to cost of sales in the accompanying statement of consolidated operations and comprehensive loss).

### ***Desenzano del Garda, Italy***

In December 2017, the Company committed to a plan to consolidate certain of its 3D printing operations from its Desenzano del Garda, Italy facility into its Gersthofen, Germany facility. These actions were taken as part of the Company's efforts to optimize its business model and maximize its facility utilization. During 2018, the Company recorded charges of \$258 associated with other exit costs (\$17) and asset impairments (\$241) related to this plan. In addition, during 2018, the Company recorded a gain from disposal of property and equipment of \$51 (recorded to cost of sales in the accompanying statement of consolidated operations and comprehensive loss). Charges associated with other exit costs recorded during 2018 were recorded to cost of sales in the accompanying statement of consolidated operations and comprehensive loss. Charges associated with asset impairments recorded during 2018 were recorded to cost of sales as a component of depreciation expense in the accompanying statement of consolidated operations and comprehensive loss. Other exit costs relate to the remaining facility rent due under a non-cancellable operating lease following the cessation of operations at the facility in January 2018. Asset impairment charges relate to certain leasehold improvements associated with the exited facility and other equipment which was abandoned by the Company. There are no additional charges expected to be incurred associated with this plan in future periods. The Company settled all amounts associated with involuntary employee terminations and facility rentals during 2018.

## **Note 7. Impairment**

During the three months ended December 31, 2019, as a result of continued operating losses and cash flow deficiencies, the Company identified a triggering event requiring a test for the recoverability of long-lived assets held and used at the asset group level. Assessing the recoverability of long-lived assets held and used requires significant judgments and estimates by management.

For purposes of testing long-lived assets for recoverability, the Company operates as three separate asset groups: United States, Europe and Japan. In assessing the recoverability of long-lived assets held and used, the Company determined the carrying amount of long-lived assets held and used to be in excess of the estimated future undiscounted net cash flows of the related assets. The Company proceeded to determine the fair value of its long-lived assets held and used, principally through use of the market approach. The Company's use of the market approach included consideration of market transactions for comparable assets. Management concluded that the fair value of long-lived assets held and used exceeded their carrying value and, as such, no impairment loss was recorded.

A significant decrease in the market price of a long-lived asset, adverse change in the use or condition of a long-lived asset, adverse change in the business climate or legal or regulatory factors impacting a long-lived asset and continued operating losses and cash flow deficiencies associated with a long-lived asset, among other indicators, could cause a future assessment to be performed which may result in an impairment of long-lived assets held and used, resulting in a material adverse effect on the financial position and results of operations of the Company.

#### **Note 8. Cash, Cash Equivalents, and Restricted Cash**

The following provides a reconciliation of cash, cash equivalents, and restricted cash as reported in the accompanying consolidated balance sheet to the same such amounts shown in the accompanying statement of consolidated cash flows at December 31:

|                                             | 2019            | 2018            |
|---------------------------------------------|-----------------|-----------------|
| Cash and cash equivalents                   | \$ 5,265        | \$ 7,592        |
| Restricted cash                             | 978             | 1,548           |
| Cash, cash equivalents, and restricted cash | <u>\$ 6,243</u> | <u>\$ 9,140</u> |

Restricted cash at December 31, 2019 and 2018 includes \$470 and \$1,044, respectively, associated with cash collateral required by a German bank for short-term financial guarantees issued by ExOne GmbH in connection with certain commercial transactions requiring security (Note 14).

Refer to Note 24 for further discussion related to an amendment to this cash collateral requirement effective in February 2020.

Restricted cash at December 31, 2019 and 2018 includes \$508 and \$504, respectively, associated with cash collateral required by a United States bank to offset certain short-term, unsecured lending commitments associated with the Company's corporate credit card program. Each of the balances described are considered legally restricted by the Company.

#### **Note 9. Inventories**

Inventories consisted of the following at December 31:

|                              | 2019             | 2018             |
|------------------------------|------------------|------------------|
| Raw materials and components | \$ 8,841         | \$ 7,747         |
| Work in process              | 4,922            | 5,147            |
| Finished goods               | 6,007            | 3,036            |
|                              | <u>\$ 19,770</u> | <u>\$ 15,930</u> |

Raw materials and components consist of consumable materials and component parts and subassemblies associated with 3D printing machine manufacturing and support activities. Work in process consists of 3D printing machines and other products in varying stages of completion. Finished goods consist of 3D printing machines and other products prepared for sale in accordance with customer specifications.

At December 31, 2019 and 2018, the allowance for slow-moving and obsolete inventories was \$3,443 and \$4,143, respectively, and has been reflected as a reduction to inventories (principally raw materials and components). The following table summarizes changes in the allowance for slow-moving and obsolete inventories for the periods indicated:

|                                                                                 | 2019            | 2018            |
|---------------------------------------------------------------------------------|-----------------|-----------------|
| Balance at beginning of period                                                  | \$ 4,143        | \$ 3,437        |
| Provision for slow-moving and obsolete inventories – net                        | 292             | 993             |
| Reductions for physical disposal (sale or scrap) of previously reserved amounts | (914)           | (138)           |
| Foreign currency translation adjustments                                        | (78)            | (149)           |
| Balance at end of period                                                        | <u>\$ 3,443</u> | <u>\$ 4,143</u> |

During 2018, the Company recorded a charge of \$561 to cost of sales in the accompanying statement of consolidated operations and comprehensive loss attributable to certain industrial microwave inventories based on a sustained absence of demand for such curing solutions and a decision by the Company to discontinue future manufacturing of such industrial microwaves.

During 2018, the Company recorded net charges of \$29 to cost of sales in the accompanying statement of consolidated operations and comprehensive loss associated with certain raw materials and components and work in process inventories for which cost was determined to exceed net realizable value. There were no such net charges recorded during 2019.

#### Note 10. Property and Equipment

Property and equipment consisted of the following at December 31:

|                                    | 2019             | 2018             | Economic Life<br>(in years) |
|------------------------------------|------------------|------------------|-----------------------------|
| Land                               | \$ 6,980         | \$ 7,024         | N/A                         |
| Buildings and related improvements | 25,675           | 25,895           | 5 - 40                      |
| Machinery and equipment            | 19,531           | 20,667           | 3 - 20                      |
| Other                              | 7,086            | 7,121            | 3 - 20                      |
|                                    | 59,272           | 60,707           |                             |
| Less: Accumulated depreciation     | (21,478)         | (19,306)         |                             |
|                                    | 37,794           | 41,401           |                             |
| Construction-in-progress           | 1,101            | 505              |                             |
| Property and equipment – net       | <u>\$ 38,895</u> | <u>\$ 41,906</u> |                             |

Machinery and equipment includes assets leased by the Company of \$63 and \$101 at December 31, 2019 and 2018, respectively.

Machinery and equipment includes assets leased to customers (principally 3D printing machines and related equipment) under operating lease arrangements of \$1,309 and \$2,345 at December 31, 2019 and 2018, respectively. The carrying value of these assets was \$426 and \$1,264 at December 31, 2019 and 2018, respectively.

Depreciation expense was \$4,581 and \$5,439 for 2019 and 2018, respectively. During 2018, the Company recorded \$64 in amortization expense related to intangible assets associated with a 2014 acquisition. Such intangible assets had no net book value at December 31, 2019 or 2018. There was no amortization expense recorded during 2019.

Refer to Note 24 for further discussion related to a sale-leaseback transaction associated with the Company's European headquarters and operating facility in Gersthofen, Germany completed in February 2020 and the related impact expected on property and equipment during the three months ending March 31, 2020.

#### Note 11. Accrued Expenses and Other Current Liabilities

Accrued expenses and other current liabilities consisted of the following at December 31:

|                                                     | 2019            | 2018            |
|-----------------------------------------------------|-----------------|-----------------|
| Deposit liability on sale of property and equipment | \$ 2,243        | \$ —            |
| Accrued payroll and related costs                   | 1,382           | 1,895           |
| Accrued license fees                                | 1,020           | 721             |
| Product warranty reserves                           | 866             | 1,670           |
| Income taxes payable                                | 503             | 90              |
| Accrued professional fees                           | 272             | 215             |
| Liability for uncertain tax positions               | —               | 820             |
| Other                                               | 814             | 638             |
|                                                     | <u>\$ 7,100</u> | <u>\$ 6,049</u> |

#### Note 12. Product Warranty Reserves

Substantially all of the Company's 3D printing machines are covered by a standard twelve-month warranty. Generally, at the time of sale, a liability is recorded (with an offset to cost of sales) based upon the expected cost of replacement parts and labor to be incurred over the life of the standard warranty. Expected cost is estimated using historical experience for similar products. The Company periodically assesses the adequacy of the product warranty reserves based on changes in these factors and records any necessary adjustments if actual experience indicates that adjustments are necessary. Future claims experience could be materially different from prior results because of the introduction of new, more complex products, a change in the Company's warranty policy in response to industry trends, competition or other external forces, or manufacturing changes that could impact product quality. In the event that the Company determines that its current or future product repair and replacement costs exceed estimates, an adjustment to these reserves would be charged to cost of sales in the period such a determination is made.

The following table summarizes changes in product warranty reserves (such amounts reflected in accrued expenses and other current liabilities in the accompanying consolidated balance sheet) for the periods indicated:

| For the year ended December 31,          | 2019          | 2018            |
|------------------------------------------|---------------|-----------------|
| Balance at beginning of period           | \$ 1,670      | \$ 1,300        |
| Provisions for new issuances             | 1,125         | 1,803           |
| Payments                                 | (1,514)       | (960)           |
| Reserve adjustments                      | (399)         | (434)           |
| Foreign currency translation adjustments | (16)          | (39)            |
| Balance at end of period                 | <u>\$ 866</u> | <u>\$ 1,670</u> |

### Note 13. Leases

#### *Lessee*

The Company leases machinery and other equipment and vehicles under operating lease arrangements (with initial terms greater than twelve months), expiring in various years through 2026. In addition, the Company leases certain equipment and vehicles under finance (previously capital) lease arrangements, which are not significant.

For all operating lease arrangements (with the exception of short-term lease arrangements), the Company presents at the commencement date: a lease liability, which is a lessee's obligation to make lease payments arising from a lease, measured on a discounted basis; and a right-of-use asset, which is an asset that represents the lessee's right to use, or control the use of, a specified asset for the lease term.

The Company has elected, as a practical expedient, not to separate non-lease components from lease components, and instead account for each separate component as a single lease component for all lease arrangements, as lessee. In addition, the Company has elected, as a practical expedient, not to apply lease recognition requirements to short-term lease arrangements, generally those with a lease term of less than twelve months, for all classes of underlying assets. In determining the lease term, the Company considers the likelihood of lease renewal options and lease termination provisions. As a result, lease payments under these short-term lease arrangements are recognized in the accompanying condensed statement of consolidated operations and comprehensive loss on a straight-line basis over the lease term.

The Company uses its incremental borrowing rate in determining the present value of lease payments, as the implicit rate of the lease arrangements is generally not readily determinable.

Through July 2019, certain of the Company's operating lease arrangements were with related parties under common control (Note 21). Lease cost under operating lease agreements with related parties, included within short-term lease cost below, was \$28 for 2019.

Future minimum lease payments of operating lease arrangements (with initial terms greater than twelve months) at December 31, 2019, were as follows:

|                                   |               |
|-----------------------------------|---------------|
| 2020                              | \$ 178        |
| 2021                              | 142           |
| 2022                              | 117           |
| 2023                              | 20            |
| 2024                              | 11            |
| Thereafter                        | 2             |
| Total minimum lease payments      | 470           |
| Less: Present value discount      | (38)          |
| Total operating lease liabilities | <u>\$ 432</u> |

For 2019 and 2018, lease cost under operating lease arrangements was \$389 (including \$189 relating to short-term lease arrangements) and \$235, respectively.

Supplemental information related to operating lease arrangements (with initial terms greater than twelve months) was as follows at December 31, 2019 and for the year then ended:

|                                                                                        |    |      |
|----------------------------------------------------------------------------------------|----|------|
| Operating lease right-of-use assets included in other noncurrent assets                | \$ | 432  |
| Operating lease liabilities included in accrued expenses and other current liabilities | \$ | 158  |
| Operating lease liabilities included in other noncurrent liabilities                   | \$ | 274  |
| Right-of-use assets obtained in exchange for new operating lease liabilities           | \$ | 209  |
| Cash paid for amounts included in the measurement of operating lease liabilities       | \$ | 198  |
| Weighted average remaining lease term (in years)                                       |    | 3.1  |
| Weighted average discount rate                                                         |    | 5.5% |

Refer to Note 24 for further discussion related to a sale-leaseback transaction associated with the Company's European headquarters and operating facility in Gersthofen, Germany completed in February 2020 and the related impact expected on right-of-use assets and operating lease liabilities during the three months ending March 31, 2020.

As previously disclosed under the prior lease accounting standard, future minimum lease payments of operating lease arrangements (with initial terms greater than twelve months) at December 31, 2018, were as follows:

|            |    |            |
|------------|----|------------|
| 2019       | \$ | 170        |
| 2020       |    | 111        |
| 2021       |    | 76         |
| 2022       |    | 67         |
| 2023       |    | 12         |
| Thereafter |    | 5          |
|            | \$ | <u>441</u> |

### ***Lessor***

The Company leases machinery and equipment to customers (principally 3D printing machines and related equipment) under lease arrangements classified as either operating leases or sales-type leases. The Company's operating lease arrangements have initial terms generally ranging from one to five years, certain of which may contain extension or termination clauses, or both. Such operating lease arrangements also generally include a purchase option to acquire the related machinery and equipment at the end of the lease term for either a fixed amount as determined at inception, or a subsequently negotiated fair market value. At December 31, 2019, the Company estimated that the total fair market value significantly exceeded the related net book value of the machinery and equipment held under the Company's operating lease arrangements. The Company's sales-type lease arrangements generally include transfer of ownership at the end of the lease term, and as such, the Company's net investment in sale-type lease arrangements presented in the Company's accompanying condensed consolidated balance sheet generally does not include an amount of unguaranteed residual value.

For certain of its arrangements, the Company separates and allocates (Note 5) certain non-lease components (principally maintenance services) from lease components. Sales, value add, and other taxes collected from customers and remitted to governmental authorities are accounted for on a net (excluded from lease income) basis. In determination of the lease term, the Company considers the likelihood of lease renewal options and lease termination provisions. Additionally, certain of the Company's lease arrangements do not qualify as sale-type leases as collectability is not reasonably assured.

The Company recognized the following components under operating and sales-type lease arrangements in the accompanying statement of consolidated operations and comprehensive loss for the periods indicated:

| For the years ended December 31, | 2019      |            | 2018      |            |
|----------------------------------|-----------|------------|-----------|------------|
|                                  | Operating | Sales-type | Operating | Sales-type |
| Revenue                          | \$ 1,523  | \$ —       | \$ 1,072  | \$ 908     |
| Interest income <sup>(a)</sup>   | \$ —      | \$ 94      | \$ —      | \$ 48      |

(a) Interest income related to sales-type leases is recorded as a component of revenue in the accompanying statement of consolidated operations and comprehensive loss for each of the periods presented.

The Company's net investment in sales-type leases consisted of the following at December 31:

|                                              | 2019          | 2018            |
|----------------------------------------------|---------------|-----------------|
| Future minimum lease payments receivable     | \$ 1,595      | \$ 1,969        |
| Less: Allowance for doubtful accounts        | (501)         | —               |
| Net future minimum lease payments receivable | 1,094         | 1,969           |
| Less: Unearned interest income               | (143)         | (316)           |
| Net investment in sales-type leases          | <u>\$ 951</u> | <u>\$ 1,653</u> |

During 2019, the Company recorded a provision for bad debt of \$416 based on a deterioration in credit quality of a lessee. There were no such provisions recorded during 2018.

Future minimum lease payments of non-cancellable operating and sales-type lease arrangements at December 31, 2019, were as follows:

|                                          | Operating     | Sales-type      |
|------------------------------------------|---------------|-----------------|
| 2020                                     | \$ 527        | \$ 424          |
| 2021                                     | 48            | 380             |
| 2022                                     | —             | 380             |
| 2023                                     | —             | 411             |
| 2024                                     | —             | —               |
| Thereafter                               | —             | —               |
| Total minimum lease payments             | <u>\$ 575</u> | <u>\$ 1,595</u> |
| Less: Allowance for doubtful accounts    |               | (501)           |
| Less: Present value discount             |               | (143)           |
| Future minimum lease payments receivable |               | <u>\$ 951</u>   |

As previously disclosed under the prior lease accounting standard, minimum future rentals under non-cancellable operating and sales-type lease arrangements at December 31, 2018, were as follows:

|            | Operating     | Sales-type      |
|------------|---------------|-----------------|
| 2019       | \$ 687        | \$ 409          |
| 2020       | 148           | 382             |
| 2021       | 48            | 382             |
| 2022       | —             | 382             |
| 2023       | —             | 414             |
| Thereafter | —             | —               |
|            | <u>\$ 883</u> | <u>\$ 1,969</u> |

#### Note 14. Contingencies and Commitments

##### Contingencies

On March 1, 2018, the Company's ExOne GmbH subsidiary notified Voxeljet AG that it has materially breached a 2003 Patent and Know-How Transfer Agreement and asserted its rights to set-off damages as a result of the breaches against the annual license fee due by the Company under the agreement. At this time, the Company cannot reasonably estimate a contingency, if any, related to this matter.

The Company is subject to various litigation, claims, and proceedings which have been or may be instituted or asserted from time to time in the ordinary course of business. Management does not believe that the outcome of any pending or threatened matters will have a material adverse effect, individually or in the aggregate, on the financial position, results of operations or cash flows of the Company.

##### Financial Guarantees and Letters of Credit

In the normal course of its operations, ExOne GmbH issues financial guarantees and letters of credit to third parties in connection with certain commercial transactions requiring security. ExOne GmbH maintains a credit facility agreement with a German bank (the "GmbH Credit Agreement") which provides for various short-term financings in the form of overdraft credit, financial guarantees, letters of credit and collateral security for commercial transactions for approximately \$1,400 (€1,300). In addition, ExOne GmbH may use the GmbH Credit Agreement for short-term, fixed-rate loans in minimum increments of approximately \$100 (€100) with minimum terms of at least thirty days. The overdraft credit interest rate is fixed at 10.2% while the interest rate associated with commercial transactions requiring security (financial guarantees, letters of credit or collateral security) is fixed at 1.75%. The GmbH

Credit Agreement has an indefinite term and is subject to cancellation by either party at any time upon repayment of amounts outstanding or expiration of commercial transactions requiring security. There is no commitment fee associated with the GmbH Credit Agreement. Financial guarantees and letters of credit issued under the GmbH Credit Agreement require cash collateral equal to the related contract amount (Note 8). There are no negative covenants associated with the GmbH Credit Agreement. The GmbH Credit Agreement has been guaranteed by the Company. At December 31, 2019 and 2018, there were no outstanding borrowings in the form of overdraft credit or short-term loans under the GmbH Credit Agreement. At December 31, 2019, total outstanding financial guarantees and letters of credit issued by ExOne GmbH under the GmbH Credit Agreement were \$470 (€419) with expiration dates ranging from February 2020 through December 2021. At December 31, 2018, total outstanding guarantees and letters of credit issued by ExOne GmbH under the GmbH Credit Agreement were \$1,044 (€912).

In addition to amounts issued by ExOne GmbH under the GmbH Credit Agreement, from time to time, ExOne GmbH enters into separate agreements with the same German bank for additional capacity for financial guarantees and letters of credit associated with certain commercial transactions requiring security. Terms of the separate agreements are substantially similar to those of the GmbH Credit Agreement. At December 31, 2019 and 2018, ExOne GmbH had a singular financial guarantee outstanding under a separate agreement for \$90 (€80) and \$96 (€80), respectively, with an expiration date of February 2023. Related to this separate agreement, the requirement for cash collateral was waived by the German bank as it also represents the counterparty in the related transaction.

Refer to Note 24 for further discussion related to an amendment and replacement of the GmbH Credit Agreement completed in February 2020.

#### **Note 15. Related Party Revolving Credit Facility**

On March 12, 2018, ExOne and its ExOne Americas LLC and ExOne GmbH subsidiaries, as guarantors (collectively, the “Loan Parties”), entered into a Credit Agreement and related ancillary agreements with LBM Holdings, LLC (“LBM”), a company controlled by S. Kent Rockwell, who was the Executive Chairman of the Company (a related party) at such date and is currently Chairman of the Board of Directors (the “Board”) of the Company, relating to a \$15,000 revolving credit facility (the “LBM Credit Agreement”) to provide additional funding for working capital and general corporate purposes. The LBM Credit Agreement provided a credit facility for a term of three years (through March 12, 2021) bearing interest at a rate of one month LIBOR plus an applicable margin of 500 basis points (6.8% and 7.5% at December 31, 2019 and 2018, respectively). The LBM Credit Agreement required a commitment fee of 75 basis points, or 0.75%, on the unused portion of the facility, payable monthly in arrears. In addition, an up-front commitment fee of 125 basis points, or 1.25% (\$188), was required at closing. Borrowings under the LBM Credit Agreement were collateralized by the accounts receivable, inventories and machinery and equipment of the Loan Parties. At December 31, 2019 and 2018, the total carrying value of collateral was approximately \$31,000 and \$30,000, respectively. At December 31, 2019 and 2018, the total estimated fair value of collateral significantly exceeded the maximum borrowing capacity under the LBM Credit Agreement. Borrowings under the LBM Credit Agreement are required to be in minimum increments of \$1,000. ExOne may terminate or reduce the credit commitment at any time during the term of the LBM Credit Agreement without penalty. ExOne may also make prepayments against outstanding borrowings under the LBM Credit Agreement at any time without penalty.

The LBM Credit Agreement contains several affirmative covenants including prompt payment of liabilities and taxes; maintenance of insurance, properties, and licenses; and compliance with laws. The LBM Credit Agreement also contains several negative covenants including restricting the incurrence of certain additional debt; prohibiting future liens (other than permitted liens); prohibiting investment in third parties; limiting the ability to pay dividends; limiting mergers, acquisitions, and dispositions; and limiting the sale of certain property and equipment of the Loan Parties. The LBM Credit Agreement does not contain any financial covenants. The LBM Credit Agreement also contains events of default, including, but not limited to, cross-default to certain other debt, breaches of representations and warranties, change of control events and breaches of covenants.

LBM was determined to be a related party based on common control by S. Kent Rockwell. Accordingly, the Company does not consider the LBM Credit Agreement indicative of a fair market value lending. Prior to execution, the LBM Credit Agreement was reviewed and approved by the Audit Committee of the Board and subsequently by a sub-committee of independent members of the Board. At the time of execution of the LBM Credit Agreement, the \$15,000 in available loan proceeds was deposited into an escrow account with an unrelated, third party financial institution acting as escrow agent pursuant to a separate Escrow Agreement by and among the parties. Loan proceeds held in escrow are available to the Company upon its submission to the escrow agent of a loan request. Such proceeds will not be available to LBM until payment in-full of the obligations under the LBM Credit Agreement and termination of the LBM Credit Agreement. Payments of principal and other obligations will be made to the escrow agent, while interest payments will be made directly to LBM. Provided there exists no potential default or event of default, the LBM Credit Agreement and Escrow Agreement prohibit any acceleration of repayment of any amount outstanding under the LBM Credit Agreement and prohibit termination of the LBM Credit Agreement or withdrawal from escrow of any unused portion of the available loan proceeds.

During 2019, the Company had borrowings of \$4,000 under the LBM Credit Agreement, all of which were subsequently repaid prior to December 31, 2019. There were no borrowings by the Company under the LBM Credit Agreement during 2018.

The Company incurred \$265 in debt issuance costs associated with the LBM Credit Agreement (including the aforementioned up front commitment fee paid at closing to LBM).

During 2019, the Company recorded interest expense relating to the LBM Credit Agreement of \$260. Included in interest expense for 2019 was \$88 associated with amortization of debt issuance costs (resulting in \$107 in remaining debt issuance costs at December 31, 2019, of which \$88 was included in prepaid expenses and other current assets and \$19 was included in other noncurrent assets in the accompanying consolidated balance sheet). Included in interest expense for 2019 was \$66 and \$106 associated with interest on borrowings and the commitment fee on the unused portion of the revolving credit facility, respectively, of which at December 31, 2019 \$28 was included in accounts payable in the accompanying consolidated balance sheet. Amounts payable to LBM at December 31, 2019 were settled by the Company in January 2020.

During 2018, the Company recorded interest expense related to the LBM Credit Agreement of \$160.

Refer to Note 24 for further discussion related to an amendment to the LBM Credit Agreement completed in February 2020.

#### Note 16. Long-Term Debt

Long-term debt consisted of the following at December 31:

|                                  | 2019            |                                       |                 | 2018            |                                       |                 |
|----------------------------------|-----------------|---------------------------------------|-----------------|-----------------|---------------------------------------|-----------------|
|                                  | Principal       | Unamortized<br>Debt Issuance<br>Costs | Net             | Principal       | Unamortized<br>Debt Issuance<br>Costs | Net             |
| Building note payable            | \$ 1,384        | \$ (20)                               | \$ 1,364        | \$ 1,533        | \$ (25)                               | \$ 1,508        |
| Less: Amount due within one year | (157)           | 4                                     | (153)           | (149)           | 5                                     | (144)           |
|                                  | <u>\$ 1,227</u> | <u>\$ (16)</u>                        | <u>\$ 1,211</u> | <u>\$ 1,384</u> | <u>\$ (20)</u>                        | <u>\$ 1,364</u> |

Terms of the building note payable include monthly payments of \$18 including interest at 4.00% through May 2017, and subsequently, monthly payments of \$19 including interest at the monthly average yield on United States Treasury Securities plus 3.25% for the remainder of the term through May 2027. The building note payable is collateralized by the Company's facility located in North Huntingdon, Pennsylvania which had a carrying value of \$4,929 at December 31, 2019.

At December 31, 2019, the Company identified that it was not in compliance with the annual cash flow-to-debt service ratio covenant associated with the building note payable. The Company requested and was granted a waiver related to compliance with this annual covenant at December 31, 2019 and through December 31, 2020. Related to the 2019 non-compliance, there were no cross-default provisions or related impacts on other lending or financing agreements.

Future maturities of long-term debt at December 31, 2019, were as follows:

|            |                 |
|------------|-----------------|
| 2020       | \$ 157          |
| 2021       | 166             |
| 2022       | 175             |
| 2023       | 184             |
| 2024       | 193             |
| Thereafter | 509             |
|            | <u>\$ 1,384</u> |

#### Note 17. Income Taxes

The components of loss before taxes were as follows:

|                          | 2019               | 2018               |
|--------------------------|--------------------|--------------------|
| United States            | \$ (16,452)        | \$ (16,262)        |
| Foreign                  | 950                | 3,755              |
| Loss before income taxes | <u>\$ (15,502)</u> | <u>\$ (12,507)</u> |

The (benefit) provision for income taxes consisted of the following:

|                                      | 2019            |                 |                 | 2018          |             |               |
|--------------------------------------|-----------------|-----------------|-----------------|---------------|-------------|---------------|
|                                      | Current         | Deferred        | Total           | Current       | Deferred    | Total         |
| United States                        | \$ 4            | \$ —            | \$ 4            | \$ 18         | \$ —        | \$ 18         |
| Foreign                              | (212)           | (199)           | (411)           | 142           | —           | 142           |
| (Benefit) provision for income taxes | <u>\$ (208)</u> | <u>\$ (199)</u> | <u>\$ (407)</u> | <u>\$ 160</u> | <u>\$ —</u> | <u>\$ 160</u> |

A reconciliation of the provision for income taxes at the United States statutory rate to the effective rate of the Company for the years ended December 31 was as follows:

|                                      | 2019            | 2018          |
|--------------------------------------|-----------------|---------------|
| United States statutory rate (21%)   | \$ (3,255)      | \$ (2,626)    |
| Effect of foreign disregarded entity | (151)           | (129)         |
| Taxes on foreign operations          | 64              | 259           |
| Net change in valuation allowances   | 4,224           | 1,798         |
| Reduction in uncertain tax positions | (818)           | —             |
| Permanent differences                | 83              | (165)         |
| Return to provision adjustments      | (163)           | 331           |
| Deferred tax adjustments             | (318)           | 810           |
| Other                                | (73)            | (118)         |
| (Benefit) provision for income taxes | <u>\$ (407)</u> | <u>\$ 160</u> |
| Effective tax rate                   | 2.6%            | (1.3)%        |

The Tax Cuts and Jobs Act (“United States Tax Reform”) reduced the United States federal statutory rate from 34% to 21% beginning in 2018. United States Tax Reform also required companies to remeasure its domestic deferred tax balances to the lower corporate income tax rate for the 2017 tax year. Additionally, United States Tax Reform created taxes on certain foreign sourced earnings known as the global intangible low-taxed income (“GILTI”) tax beginning with tax year 2018. The Company has elected to account for GILTI as a period cost in the year the tax is incurred. The accounting for the tax effects of United States Tax Reform was completed as of December 31, 2018 under SEC Staff Accounting Bulletin No. 118.

The components of deferred income tax assets and liabilities consisted of the following at December 31:

|                                                      | 2019          | 2018          |
|------------------------------------------------------|---------------|---------------|
| <b>Deferred tax assets</b>                           |               |               |
| Accounts receivable                                  | \$ 110        | \$ 46         |
| Inventories                                          | 710           | 1,077         |
| Accrued expenses and other current liabilities       | 477           | 489           |
| Net operating loss carryforwards                     | 27,710        | 24,419        |
| Tax credit carryforwards                             | 676           | 676           |
| Other                                                | 1,968         | 1,059         |
| Valuation allowance                                  | (30,666)      | (26,563)      |
| Total deferred tax assets                            | 985           | 1,203         |
| <b>Deferred tax liabilities</b>                      |               |               |
| Property and equipment                               | 690           | 703           |
| Other                                                | 94            | 501           |
| Total deferred tax liabilities                       | 784           | 1,204         |
| Net deferred tax assets (liabilities) <sup>(a)</sup> | <u>\$ 201</u> | <u>\$ (1)</u> |

(a) At December 31, 2019, net deferred tax assets were reflected in other noncurrent assets in the accompanying consolidated balance sheet. At December 31, 2018, net deferred tax liabilities were reflected in other noncurrent liabilities in the accompanying consolidated balance sheet.

The Company has provided a valuation allowance for certain of its net deferred tax assets as a result of the Company not generating consistent net operating profits in certain jurisdictions in which it operates. As such, certain benefits from deferred taxes in any of the periods presented have been fully offset by changes in the valuation allowance for net deferred tax assets. The Company continues to assess its future taxable income by jurisdiction based on recent historical operating results, the expected timing of reversal of temporary differences, various tax planning strategies that the Company may be able to enact in future periods, the impact of potential operating changes on the business and forecast results from operations in future periods based on available information at the end of each reporting period. To the extent that the Company is able to reach the conclusion that its net deferred tax assets are realizable based on any combination of the above factors in a single, or in multiple, taxing jurisdictions, a reversal of the related portion of the Company’s existing valuation allowances may occur.

The following table summarizes changes to the Company's valuation allowances for the years ended December 31:

|                                                                         | 2019             | 2018             |
|-------------------------------------------------------------------------|------------------|------------------|
| Balance at beginning of period                                          | \$ 26,563        | \$ 25,690        |
| Net increases in allowances                                             | 3,857            | 1,247            |
| Net increases in net operating losses offset by uncertain tax positions | 368              | 551              |
| Foreign currency translation adjustments                                | (122)            | (925)            |
| Balance at end of period                                                | <u>\$ 30,666</u> | <u>\$ 26,563</u> |

At December 31, 2019, the Company had \$98,725 in net operating loss carryforwards, subject to certain limitations, \$70,100 of which expire from 2033 to 2037, and \$676 in tax credit carryforwards which expire in 2023, to offset the future taxable income of its United States subsidiary. At December 31, 2019, the Company had \$2,428 in net operating loss carryforwards which expire from 2022 through 2026, to offset the future taxable income of its Japanese subsidiary. At December 31, 2019, the Company had \$19,503 in net operating loss carryforwards, which do not expire but may be limited as to their use in a particular period, to offset the future taxable income of its German subsidiary.

At December 31, 2018, the Company had a liability for uncertain tax positions related primarily to certain intercompany transactions. A reconciliation of the beginning and ending amount of unrecognized tax benefits (including accrued interest and penalties) at December 31 was as follows:

|                                                              | 2019        | 2018            |
|--------------------------------------------------------------|-------------|-----------------|
| Balance at beginning of period                               | \$ 1,186    | \$ 1,775        |
| Additions based on tax positions related to the current year | —           | 60              |
| Additions for tax positions of prior years                   | 5           | —               |
| Reductions for tax positions of prior years                  | (1,186)     | (606)           |
| Settlements                                                  | —           | —               |
| Foreign currency translation adjustments                     | (5)         | (43)            |
| Balance at end of period                                     | <u>\$ —</u> | <u>\$ 1,186</u> |

The Company includes interest and penalties related to income taxes as a component of the provision for income taxes in the accompanying statement of consolidated operations and comprehensive loss (there were no such interest or penalties included in the provision for income taxes in 2019 or 2018).

At December 31, 2018, there were \$820 in unrecognized tax benefits (including accrued interest and penalties) that if recognized would affect the annual effective tax rate (such amounts were included in accrued expenses and other current liabilities in the accompanying consolidated balance sheet at December 31, 2018).

At December 31, 2018, the Company's ExOne GmbH (2010-2013) and ExOne Property GmbH (2013) subsidiaries were under examination by local taxing authorities in Germany. In January 2019, this examination was concluded by the local taxing authorities in Germany without significant adjustment to previously established tax positions. As a result, during the three months ended March 31, 2019, the Company recorded a reversal of certain of its previously recorded liabilities for uncertain tax positions of \$1,075, of which \$257 was offset against net operating loss carryforwards. During 2019, the Company's ExOne GmbH and ExOne Property GmbH subsidiaries were subject to a tax examination by local taxing authorities in Germany related to their respective 2014 tax years. In December 2019, this examination was concluded by the local taxing authorities in Germany without significant adjustment to previously established tax positions. As a result, during the three months ended December 31, 2019, the Company recorded a reversal of certain of its previously recorded liabilities for uncertain tax positions of \$111, all of which was offset against net operating loss carryforwards.

During 2018, in connection with its periodic re-assessment of its uncertain tax positions, the Company determined that the uncertain tax positions related to its ExOne KK (Japan) subsidiary no longer met the more likely than not criteria, and as a result, the related liability was reversed in-full. No amount was recorded as a component of the provision for income taxes due to existing net operating loss carryforwards.

The Company files income tax returns in the United States, Germany, Japan and Italy (through 2018). The following table summarizes tax years remaining subject to examination for each of the Company's subsidiaries at December 31, 2019:

| <b>Jurisdiction</b> | <b>Tax Years<br/>Remaining Subject<br/>to Examination</b> |
|---------------------|-----------------------------------------------------------|
| United States       | 2016-2019                                                 |
| Germany             | 2015-2019                                                 |
| Japan               | 2017-2019                                                 |
| Italy               | 2014-2018                                                 |

#### **Note 18. Equity-Based Compensation**

On January 24, 2013, the Board adopted the 2013 Equity Incentive Plan (the "Plan"). In connection with the adoption of the Plan, 500,000 shares of common stock were reserved for issuance pursuant to the Plan, with automatic increases in such reserve available each year annually on January 1 from 2014 through 2023 equal to the lesser of 3.0% of the total outstanding shares of common stock as of December 31 of the immediately preceding year or, a number of shares of common stock determined by the Board, provided that the maximum number of shares authorized under the Plan did not exceed 1,992,241 shares, subject to certain adjustments. The maximum number of shares authorized under the Plan was reached on January 1, 2017. At December 31, 2019, 627,934 shares remained available for future issuances under the Plan.

Stock options and restricted stock issued by the Company under the Plan are generally subject to service conditions resulting in annual vesting on the anniversary of the date of grant over a period typically ranging between one and three years. Certain stock options and restricted stock issued by the Company under the Plan vest immediately upon issuance. Stock options issued by the Company under the Plan have contractual lives which expire over a period typically ranging between five and ten years from the date of grant subject to continued service to the Company by the participant.

On February 7, 2018, the Compensation Committee of the Board adopted the 2018 Annual Incentive Program (the "2018 Program") as a subplan under the Plan. The 2018 Program provided an opportunity for performance-based compensation to senior executive officers of the Company, among others. The target annual incentive for each 2018 Program participant was expressed as a percentage of base salary and was conditioned on the achievement of certain financial goals (as approved by the Compensation Committee of the Board) or a combination of financial and non-financial goals. The Compensation Committee of the Board retained negative discretion over amounts payable under the 2018 Program. During 2018, total compensation expense associated with the 2018 Program was \$460, split between cost of sales (\$91), research and development (\$127) and selling general and administrative expenses (\$242) in the accompanying statement of consolidated operations and comprehensive loss, of which \$167 was settled in equity by the Company in March 2019 resulting in the issuance of 10,076 shares of unrestricted common stock. In connection with the issuance of shares related to the 2018 Program, the Company made cash payments for taxes of \$68 relating to the net settlement of the equity-based awards. There were no similar cash payments for taxes or net settlement of equity-based awards during 2018.

On February 6, 2019, the Compensation Committee of the Board adopted the 2019 Annual Incentive Program (the "2019 Program") as a subplan under the Plan. The 2019 Program provided an opportunity for performance-based compensation to senior executive officers of the Company, among others. The target annual incentive for each 2019 Program participant was expressed as a percentage of base salary and was conditioned on the achievement of certain financial goals (as approved by the Compensation Committee of the Board) or a combination of financial and non-financial goals. The Compensation Committee of the Board retained negative discretion over amounts payable under the 2019 Program. During 2019, there was no compensation expense associated with the 2019 Program as a result of underperformance against the 2019 financial goals of the Company. No shares of unrestricted common stock are expected to be issued in connection with the 2019 Program as a result.

The following table summarizes the total equity-based compensation expense recognized by the Company:

|                                                                    | <b>2019</b>     | <b>2018</b>   |
|--------------------------------------------------------------------|-----------------|---------------|
| <b>Equity-based compensation expense recognized:</b>               |                 |               |
| Stock options                                                      | \$ 709          | \$ 357        |
| Restricted stock                                                   | 696             | 433           |
| Other <sup>(a)</sup>                                               | 11              | 178           |
| <b>Total equity-based compensation expense before income taxes</b> | <b>1,416</b>    | <b>968</b>    |
| Benefit for income taxes <sup>(b)</sup>                            | —               | —             |
| <b>Total equity-based compensation expense net of income taxes</b> | <b>\$ 1,416</b> | <b>\$ 968</b> |

(a) For 2019, Other represents expense associated with employee contractual amounts to be settled in equity. For 2018, Other represents expense associated with the 2018 Program and other employee contractual amounts to be settled in equity.

(b) The benefit for income taxes from equity-based compensation for each of the periods presented has been determined to be \$0 based on valuation allowances against net deferred tax assets.

At December 31, 2019, total future compensation expense related to unvested awards yet to be recognized by the Company was \$874 for stock options and \$143 for restricted stock. Total future compensation expense related to unvested awards yet to be recognized by the Company is expected to be recognized over a weighted-average remaining vesting period of 1.5 years.

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

|                                              | 2019            | 2018            |
|----------------------------------------------|-----------------|-----------------|
| Weighted average fair value per stock option | \$2.51 - \$3.68 | \$2.23 - \$4.16 |
| Volatility                                   | 53.3% - 60.1%   | 54.1% - 63.7%   |
| Average risk-free interest rate              | 1.5% - 2.5%     | 2.5% - 3.0%     |
| Dividend yield                               | 0.0%            | 0.0%            |
| Expected term (years)                        | 2.5 - 3.5       | 2.5 - 3.3       |

For certain stock option awards, volatility is estimated based on the historical volatility of the Company when the expected term of the award is less than the period for which the Company has been publicly traded. For certain stock option awards, volatility is estimated based on the historical volatilities of certain peer group companies when the expected term of the award exceeds the period for which the Company has been publicly traded. The average risk-free rate is based on a weighted average yield curve of risk-free interest rates consistent with the expected term of the awards. Expected dividend yield is based on historical dividend data as well as future expectations. Expected term is calculated using the simplified method as the Company does not have sufficient historical exercise experience upon which to base an estimate.

The activity for stock options was as follows:

|                                    | 2019              |                                 |                                        | 2018              |                                 |                                        |
|------------------------------------|-------------------|---------------------------------|----------------------------------------|-------------------|---------------------------------|----------------------------------------|
|                                    | Number of Options | Weighted Average Exercise Price | Weighted Average Grant Date Fair Value | Number of Options | Weighted Average Exercise Price | Weighted Average Grant Date Fair Value |
| Outstanding at beginning of period | 621,986           | \$ 10.66                        | \$ 5.52                                | 674,470           | \$ 11.58                        | \$ 6.41                                |
| Stock options granted              | 319,310           | \$ 7.34                         | \$ 2.94                                | 258,100           | \$ 8.01                         | \$ 3.43                                |
| Stock options exercised            | (40,432)          | \$ 7.17                         | \$ 3.03                                | (67,083)          | \$ 7.89                         | \$ 3.85                                |
| Stock options forfeited            | (9,773)           | \$ 7.67                         | \$ 3.70                                | (135,169)         | \$ 9.48                         | \$ 5.18                                |
| Stock options expired              | (36,832)          | \$ 16.94                        | \$ 10.35                               | (108,332)         | \$ 13.28                        | \$ 7.58                                |
| Outstanding at end of period       | 854,259           | \$ 9.34                         | \$ 4.49                                | 621,986           | \$ 10.66                        | \$ 5.52                                |
| Exercisable at end of period       | 494,884           | \$ 10.85                        | \$ 5.59                                | 409,914           | \$ 11.89                        | \$ 6.44                                |
| Expected to vest at end of period  | 359,375           | \$ 7.27                         | \$ 2.96                                | 212,072           | \$ 8.27                         | \$ 3.76                                |

At December 31, 2019, intrinsic value associated with stock options exercisable and stock options expected to vest was \$45 and \$116, respectively. The weighted average remaining contractual term of stock options exercisable and stock options expected to vest at December 31, 2019, was 3.8 and 4.7 years, respectively. Stock options with an aggregate intrinsic value of \$358 were exercised by employees during 2019, resulting in proceeds to the Company from the exercise of stock options of \$289. Stock options with an aggregate intrinsic value of \$586 were exercised by employees during 2018, resulting in proceeds to the Company from the exercise of stock options of \$529. The Company received no income tax benefit related to stock option exercises in either period.

The activity for restricted stock was as follows:

|                                    | 2019                       |                                        | 2018                       |                                        |
|------------------------------------|----------------------------|----------------------------------------|----------------------------|----------------------------------------|
|                                    | Shares of Restricted Stock | Weighted Average Grant Date Fair Value | Shares of Restricted Stock | Weighted Average Grant Date Fair Value |
| Outstanding at beginning of period | 67,001                     | \$ 8.30                                | 52,502                     | \$ 11.07                               |
| Restricted stock granted           | 66,763                     | \$ 8.98                                | 57,000                     | \$ 7.39                                |
| Restricted stock vested            | (62,251)                   | \$ 8.65                                | (42,501)                   | \$ 10.51                               |
| Restricted stock forfeited         | (5,000)                    | \$ 6.75                                | —                          | \$ —                                   |
| Outstanding at end of period       | 66,513                     | \$ 8.76                                | 67,001                     | \$ 8.30                                |
| Expected to vest at end of period  | 66,513                     | \$ 8.76                                | 67,001                     | \$ 8.30                                |

Restricted stock vesting during 2019 and 2018 had a fair value of \$535 and \$326, respectively.

## Note 19. Fair Value Measurements

Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. When determining the fair value measurements for assets and liabilities which are required to be recorded at fair value, the Company considers the principal or most advantageous market in which the Company would transact and the market-based risk measurements or assumptions that market participants would use in pricing the asset or liability, such as inherent risk, transfer restrictions and credit risk.

The Company applies the following fair value hierarchy, which prioritizes the inputs used to measure fair value into three levels and bases the categorization within the hierarchy upon the lowest level of input that is available and significant to the fair value measurement:

**Level 1** Observable inputs such as quoted prices in active markets for identical investments that the Company has the ability to access.

**Level 2** Inputs include:

Quoted prices for similar assets or liabilities in active markets;

Quoted prices for identical or similar assets or liabilities in inactive markets;

Inputs, other than quoted prices in active markets, that are observable either directly or indirectly; and

Inputs that are derived principally from, or corroborated by, observable market data by correlation or other means.

**Level 3** Inputs that are generally unobservable and typically reflect management's estimates of assumptions that market participants would use in pricing the asset or liability.

The Company is required to disclose its estimate of the fair value of material financial instruments, including those recorded as assets or liabilities in its consolidated financial statements, in accordance with GAAP. At December 31, 2019 and 2018, the Company had no financial instruments (assets or liabilities) measured at fair value on a recurring basis.

The carrying values and fair values of other financial instruments (assets and liabilities) not required to be recorded at fair value were as follows at December 31:

|                                                        | 2019           |            | 2018           |            |
|--------------------------------------------------------|----------------|------------|----------------|------------|
|                                                        | Carrying Value | Fair Value | Carrying Value | Fair Value |
| Cash and cash equivalents                              | \$ 5,265       | \$ 5,265   | \$ 7,592       | \$ 7,592   |
| Restricted cash                                        | \$ 978         | \$ 978     | \$ 1,548       | \$ 1,548   |
| Debt issuance costs <sup>(a)</sup>                     | \$ 107         | \$ —       | \$ 195         | \$ —       |
| Current portion of long-term debt <sup>(b)</sup>       | \$ 153         | \$ 157     | \$ 144         | \$ 149     |
| Long-term debt – net of current portion <sup>(b)</sup> | \$ 1,211       | \$ 1,227   | \$ 1,364       | \$ 1,384   |

(a) Represents debt issuance costs associated with the Company's related party revolving credit facility (Note 15) of which \$88 are included in prepaid expenses and other current assets for both periods and \$19 and \$107 are included in other noncurrent assets in the accompanying consolidated balance sheet at December 31, 2019 and 2018, respectively.

(b) Carrying values at December 31, 2019 and 2018 are net of unamortized debt issuance costs of \$20 and \$25, respectively.

The carrying amounts of cash and cash equivalents, restricted cash and current portion of long-term debt approximate fair value due to their short-term maturities. The fair value of long-term debt – net of current portion has been estimated by management based on the consideration of applicable interest rates (including certain instruments at variable or floating rates). Cash and cash equivalents and restricted cash were classified as Level 1; Current portion of long-term debt and long-term debt – net of current portion were classified as Level 2.

## Note 20. Concentration of Credit Risk

During 2019 and 2018, the Company conducted a significant portion of its business with a limited number of customers, though not necessarily the same customers for each respective period. During 2019 and 2018, the Company's five most significant customers represented 17.4% and 16.5% of total revenue, respectively. At December 31, 2019 and 2018, accounts receivable from the Company's five most significant customers were \$3,230 and \$2,344, respectively.

## Note 21. Related Party Transactions

Purchases of products and/or services from related parties during 2019 and 2018, were \$63 and \$27, respectively. Purchases of products and/or services by the Company during each of the respective periods primarily included website design services and leased office space (through July 2019) from related parties under common control by S. Kent Rockwell (currently the Chairman of the Board of the Company and previously the Executive Chairman and Chief Executive Officer of the Company). Also included in purchases of products and/or services by the Company during 2019, was the purchase of a 3D printing machine and certain ancillary equipment for \$30 from an educational institution determined to be a related party on the basis that S. Kent Rockwell serves as a trustee of the educational institution.

None of the transactions met a threshold requiring review and approval by the Audit Committee of the Board.

Amounts due to related parties associated with the purchase of products and/or services at December 31, 2018 were \$1 and are reflected in accounts payable in the accompanying condensed consolidated balance sheet. There were no amounts due to related parties associated with the purchase of products and/or services at December 31, 2019.

The Company also receives the benefit of the corporate use of an airplane from a related party under common control by S. Kent Rockwell for no consideration. The Company estimates the fair market value of the benefits received during 2019 was \$3. The Company estimates the fair market value of the benefits received during 2018 was \$8.

Refer to Note 15 and Note 24 for further discussion relating to the Company's revolving credit facility with a related party.

## Note 22. Other Expense (Income) – Net

Other (income) expense – net consisted of the following:

|                                       | 2019          | 2018            |
|---------------------------------------|---------------|-----------------|
| Gain on settlement of insurance claim | \$ (17)       | \$ (819)        |
| Interest income                       | (11)          | (39)            |
| Foreign currency losses – net         | 102           | 93              |
| Bank fees                             | 115           | 95              |
| Other – net                           | (78)          | (74)            |
|                                       | <u>\$ 111</u> | <u>\$ (744)</u> |

For 2018, gain on settlement of insurance claim represented \$819 of a realized gain associated with an insurance recovery for a 3D printing machine damaged by a third party freight company while in transit. For 2018, foreign currency losses – net included \$309 of foreign exchange losses associated with the settlement of an intercompany note payable with ExOne Italy S.r.l. previously identified as a long-term investment in the subsidiary and the dissolution of the related legal entity (Note 1).

## Note 23. Segment and Geographic Information

The Company manages its business globally in a singular operating segment in which it develops, manufactures and markets 3D printing machines, 3D printed and other products, materials and services. Geographically, the Company conducts its business through wholly-owned subsidiaries in the United States, Germany, Japan and Italy (through December 2018).

Geographic information for revenue for the year ended December 31 was as follows (based on the country where the sale originated):

|                      | 2019             | 2018             |
|----------------------|------------------|------------------|
| United States        | \$ 20,897        | \$ 29,514        |
| Germany              | 20,966           | 27,084           |
| Japan                | 11,413           | 8,027            |
| Italy <sup>(a)</sup> | —                | 19               |
|                      | <u>\$ 53,276</u> | <u>\$ 64,644</u> |

(a) In December 2017, the Company committed to a plan to consolidate certain of its 3D printing operations from its Desenzano del Garda, Italy facility into its Gersthofen, Germany facility (Note 6). Operations at the Desenzano del Garda, Italy facility effectively ceased during the three months ended March 31, 2018 and in December 2018, the Company completed the dissolution of its ExOne Italy S.r.l. subsidiary.

Geographic information for long-lived assets at December 31 was as follows (based on the physical location of assets):

|                       | 2019             | 2018             |
|-----------------------|------------------|------------------|
| United States         | \$ 12,519        | \$ 13,603        |
| Germany               | 21,821           | 23,249           |
| Japan                 | 4,555            | 4,650            |
| Sweden <sup>(a)</sup> | —                | 205              |
| Italy <sup>(a)</sup>  | —                | 199              |
|                       | <u>\$ 38,895</u> | <u>\$ 41,906</u> |

(a) At December 31, 2018, for both Sweden and Italy, long-lived assets represent 3D printing machines and related equipment held by the Company under operating lease agreements with customers. For Sweden, during 2019, the Company settled this operating lease agreement in connection with the related customer committing to the purchase of an unrelated 3D printing machine and related equipment. For Italy, during 2019, the customer exercised its right to purchase the 3D printing machine and related equipment from the Company.

Refer to Note 24 for further discussion related to a sale-leaseback transaction associated with the Company's European headquarters and operating facility in Gersthofen, Germany completed in February 2020 and the related impact expected on long-lived assets for Germany during the three months ending March 31, 2020.

## **Note 24. Subsequent Events**

### ***Sale-Leaseback of Gersthofen, Germany Facility***

On December 10, 2019, ExOne Property GmbH and ExOne GmbH, the German subsidiaries of the Company (the “German Subsidiaries”), entered into a purchase agreement (the “Purchase Agreement”) with Solidas Immobilien und Grundbesitz GmbH, a private, unaffiliated German real estate investor (the “Buyer”), for the sale of the Company’s European headquarters and operating facility in Gersthofen, Germany (the “Facility”) for a cash price of €17,000 (approximately \$18,500, of which approximately \$2,200 was received prior to December 31, 2019). Concurrently with the execution of the Purchase Agreement, ExOne GmbH and the Buyer entered into a rental contract (the “Lease”) for the leaseback of the Facility for an initial aggregate annual rent totaling €1,500 (approximately \$1,700), plus applicable taxes, which is fixed during the initial three-year term and is subject to adjustment on an annual basis (in accordance with the consumer price index for Germany) during the two five-year option extension periods. The sale-leaseback transaction closed on February 18, 2020.

### ***Amendment to Related Party Revolving Credit Facility***

On February 18, 2020, following completion of the sale-leaseback transaction further described above, the Loan Parties and LBM entered into a First Amendment to the LBM Credit Agreement (the “LBM Amendment”) which (i) reduced the available capacity under the revolving credit facility to \$10,000, (ii) extended the term until March 31, 2024, (iii) increased the commitment fee to 100 basis points, or 1.00%, on the unused portion of the revolving credit facility, and (iv) provided a process for the replacement of the LIBOR index after 2021. In addition, the accounts receivable related to ExOne GmbH no longer serve as collateral for borrowings under the LBM Credit Agreement.

The Company does not consider the amended revolving credit facility with LBM to be indicative of a fair market value lending based on the prior determination of LBM as a related party. Prior to execution, the LBM Amendment was reviewed and approved by the Audit Committee of the Board and subsequently by a sub-committee of independent members of the Board.

### ***Amendment to GmbH Credit Agreement***

On February 24, 2020, ExOne GmbH entered into an amendment and replacement of the GmbH Credit Agreement (the “Amended GmbH Credit Agreement”). The Amended GmbH Credit Agreement eliminates the overdraft credit and short-term loan features of the credit agreement (Note 14) and replaces them with an increased capacity amount of €3,500 (approximately \$3,800) for the issuance of financial guarantees and letters of credit for commercial transactions requiring security. The cash collateral requirement for the issuance of financial guarantees and letters of credit for commercial transactions requiring security has been eliminated for amounts up to €1,000 (approximately \$1,000) as the amendment provides the German bank with a collateral interest in the accounts receivable of ExOne GmbH. Amounts in excess of €1,000 (approximately \$1,000) continue to require cash collateral.

The Company has evaluated all of its activities and concluded that no other subsequent events have occurred that would require recognition in the consolidated financial statements or disclosure in the notes to the consolidated financial statements, except as described above.

**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***

Our management, including our Chief Executive Officer and our Chief Financial Officer, performed an evaluation of the effectiveness of our disclosure controls and procedures. Based on that evaluation, our Chief Executive Officer and our Chief Financial Officer concluded that, as of the end of the fiscal year covered by this Annual Report on Form 10-K, as a result of certain material weaknesses in our internal control over financial reporting (further described below), that our disclosure controls and procedures were ineffective.

In connection with the preparation of our consolidated financial statements for the year ended December 31, 2019, we concluded that there are material weaknesses in the design and operating effectiveness of our internal control over financial reporting as defined in SEC Regulation S-X. A material weakness is a deficiency, or a combination of deficiencies, in internal control over financial reporting such that there is a reasonable possibility that a material misstatement of the annual or interim financial statements will not be prevented or detected on a timely basis.

A description of the identified material weaknesses in internal control over financial reporting is as follows:

- *We did not maintain adequate control over user access rights for a significant information technology system.*
- *We did not maintain adequate control over application changes for a significant information technology system.*
- *We did not maintain adequate control over pricing and discounts associated with sales of certain of our products.*

Management's Report on our internal control over financial reporting is included in Part II Item 8 of this Annual Report on Form 10-K under the caption "Management's Report on Internal Control Over Financial Reporting" and is incorporated herein by reference. Our independent registered public accounting firm has issued an attestation report on management's maintenance of effective internal control over financial reporting, which is set forth in Part II Item 8 of this Annual Report on Form 10-K under the caption "Report of Independent Registered Public Accounting Firm" and is incorporated herein by reference.

Notwithstanding the identified material weaknesses further described above, management believes that the consolidated financial statements and related notes thereto included in this Annual Report on Form 10-K fairly present, in all material respects, our financial condition, results of operations and cash flows for the periods presented.

***Changes in Internal Control over Financial Reporting***

During the three months ended December 31, 2019, as a result of the identification of the material weaknesses further described above, management has initiated the development of a remediation plan in an effort to ensure that our disclosure controls and procedures are effective. Our remediation plan is expected to include a comprehensive evaluation of the people, processes and systems responsible for each of the underlying control activities. We expect to complete this evaluation in 2020 and put measures in place in an effort to remediate the identified material weaknesses. However, we cannot be certain that the measures we may take will ensure that we establish and maintain adequate controls over our financial processes and reporting in the future or that material weaknesses identified will be remediated.

Other than the items further described above, there were no changes in our internal control over financial reporting during 2019, that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

**Item 9B. Other Information.**

None.

## **PART III**

### **Item 10. Directors, Executive Officers and Corporate Governance.**

The information required by Item 10 is incorporated by reference from the information under the captions “Proposal 1 — Election of Directors,” “Executive Officers of ExOne,” “Delinquent Section 16(a) Reports,” “Corporate Governance — Audit Committee” and “Corporate Governance — Code of Ethics and Business Conduct” in our definitive proxy statement for the Annual Meeting of Stockholders to be held on May 13, 2020, which will be filed with the SEC within 120 days of the end of the fiscal year ended December 31, 2019.

### **Item 11. Executive Compensation.**

The information required by Item 11 is incorporated by reference from the information under the captions “Compensation of Named Executive Officers,” “Director Compensation,” and “Corporate Governance — Compensation Committee Interlocks and Insider Participation” in our definitive proxy statement for the Annual Meeting of Stockholders to be held on May 13, 2020, which will be filed with the SEC within 120 days of the end of the fiscal year ended December 31, 2019.

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

The information required by Item 12 is incorporated by reference from the information under the caption “Securities Authorized for Issuance Under Equity Compensation Plans” in Part II Item 5 of this Annual Report on Form 10-K and under the caption “Security Ownership of Certain Beneficial Owners and Management” in our definitive proxy statement for the Annual Meeting of Stockholders to be held on May 13, 2020, which will be filed with the SEC within 120 days of the end of the fiscal year ended December 31, 2019.

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

The information required by Item 13 is incorporated by reference from the information under the captions “Corporate Governance — Independence of the Board and Committees” and “Transactions with Related Persons” in our definitive proxy statement for the Annual Meeting of Stockholders to be held on May 13, 2020, which will be filed with the SEC within 120 days of the end of the fiscal year ended December 31, 2019.

### **Item 14. Principal Accountant Fees and Services.**

The information required by Item 14 is incorporated by reference from the information under the caption “Audit Fees and Services” in our definitive proxy statement for the Annual Meeting of Stockholders to be held on May 13, 2020, which will be filed with the SEC within 120 days of the end of the fiscal year ended December 31, 2019.

## **PART IV**

### **Item 15. Exhibits and Financial Statement Schedules.**

#### **(a)(1) Financial Statements**

See Item 8 of Part II of this Annual Report on Form 10-K.

#### **(a)(2) Financial Statement Schedules**

Financial statement schedules have been omitted because they are not applicable, not required, or the required information is included in the consolidated financial statements or notes thereto.

All other schedules for which provision is made in the applicable accounting regulations of the SEC are not required under the related instructions or are inapplicable and therefore have been omitted.

#### **(a)(3) Exhibits**

The Exhibits listed on the accompanying Index to Exhibits are filed as part of this Annual Report on Form 10-K.

## EXHIBIT INDEX

The agreements and other documents filed as exhibits to this report are not intended to provide factual information or other disclosure other than with respect to the terms of the agreements or other documents themselves, and you should not rely on them for that purpose. In particular, any representations and warranties made by us in these agreements or other documents were made solely within the specific context of the relevant agreement or document and may not describe the actual state of affairs as of the date they were made or at any other time.

| <b>Exhibit Number</b> | <b>Description</b>                                                                                                              | <b>Method of Filing</b>                                                                                                                      |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| 3.1                   | Certificate of Incorporation.                                                                                                   | Incorporated by reference to Exhibit 3.1 to Form S-1 Registration Statement (#333-185933) filed on January 8, 2013.                          |
| 3.2                   | Amended and Restated Bylaws, as amended through August 19, 2013.                                                                | Incorporated by reference to Exhibit 3.2 to Form 10-K (#001-35806) filed on March 22, 2016.                                                  |
| 4.1                   | Form of Stock Certificate.                                                                                                      | Incorporated by reference to Exhibit 4.1 to Amendment No. 2 to Form S-1 Registration Statement (#333-185933) filed on January 28, 2013.      |
| 4.2                   | Description of the Company's Common Stock.                                                                                      | Filed herewith.                                                                                                                              |
| 10.1                  | 2013 Equity Incentive Plan.*                                                                                                    | Incorporated by reference to Exhibit 10.07.01 to Amendment No. 1 to Form S-1 Registration Statement (#333-185933) filed on January 24, 2013. |
| 10.2                  | Form of Restricted Stock Award Agreement under 2013 Equity Incentive Plan.*                                                     | Incorporated by reference to Exhibit 99.2 to the Registration Statement on Form S-8 (No. 333-187053) filed on March 5, 2013.                 |
| 10.3                  | Form of Award Agreements under 2013 Equity Incentive Plan.*                                                                     | Incorporated by reference to Exhibit 10.07.02 to Amendment No. 1 to Form S-1 Registration Statement (#333-185933) filed on January 24, 2013. |
| 10.4                  | Form of Stock Bonus Award Agreement under 2013 Equity Incentive Plan.*                                                          | Incorporated by reference to Exhibit 10.26 to Form 10-K (#001-35806) filed on March 20, 2014.                                                |
| 10.5                  | Credit Agreement dated March 12, 2018 among the Company, ExOne Americas LLC, ExOne GmbH and LBM Holdings LLC.                   | Incorporated by reference to Exhibit 10.9 to Form 10-K (#001-35806) filed on March 15, 2018.                                                 |
| 10.6                  | Escrow Agreement dated March 12, 2018 among the Company, LBM Holdings LLC and Huntington National Bank.                         | Incorporated by reference to Exhibit 10.10 to Form 10-K (#001-35806) filed on March 15, 2018.                                                |
| 10.7                  | Form of Indemnification Agreement for Officers and Directors.                                                                   | Incorporated by reference to Exhibit 10.1 to Form 8-K (#001-35806) filed on March 29, 2013.                                                  |
| 10.8                  | Change of Control Severance Plan, as amended August 8, 2018.*                                                                   | Incorporated by reference to Exhibit 10.1 to Form 10-Q (#001-35806) filed on November 8, 2018.                                               |
| 10.9                  | Letter Agreement dated October 25, 2018 between the Company and John F. Hartner.*                                               | Incorporated by reference to Exhibit 10.13 to Form 10-K (#001-35806) filed on March 15, 2019.                                                |
| 10.10                 | Employment Agreement dated May 15, 2019 between the Company and John F. Hartner.*                                               | Incorporated by reference to Exhibit 10.1 to Form 10-Q (#001-35806) filed on August 7, 2019.                                                 |
| 10.11                 | Sales Contract dated December 10, 2019 among ExOne GmbH, ExOne Property GmbH and Solidas Immobilien und Grundbesitz GmbH.       | Filed herewith.                                                                                                                              |
| 10.12                 | Lease Agreement for Commercial Premises dated December 10, 2019 between ExOne GmbH and Solidas Immobilien und Grundbesitz GmbH. | Filed herewith.                                                                                                                              |

|       |                                                                                                                                     |                 |
|-------|-------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| 10.13 | First Amendment to Credit Agreement dated February 18, 2020 among the Company, ExOne Americas LLC, ExOne GmbH and LBM Holdings LLC. | Filed herewith. |
| 10.14 | Credit Agreement dated February 24, 2020 between Sparkasse and ExOne GmbH.                                                          | Filed herewith. |
| 21.1  | Subsidiaries of the Registrant.                                                                                                     | Filed herewith. |
| 23.1  | Consent of Schneider Downs & Co., Inc.                                                                                              | Filed herewith. |
| 31.1  | Rule 13(a)-14(a) Certification of Principal Executive Officer.                                                                      | Filed herewith. |
| 31.2  | Rule 13(a)-14(a) Certification of Principal Financial Officer.                                                                      | Filed herewith. |
| 32    | Section 1350 Certification of Principal Executive Officer and Principal Financial Officer.                                          | Filed herewith. |
| 101   | Interactive Data File.                                                                                                              | Filed herewith. |

*Each management contract and compensatory arrangement in which any director or any named executive officer participates has been marked with an asterisk (\*).*

You can obtain copies of exhibits to our filings electronically at the SEC's website at [www.sec.gov](http://www.sec.gov) or by mail from the Public Reference Section of the SEC at 100 F Street, N.E., Washington, D.C. 20549 at prescribed rates. The exhibits are also available as part of the Annual Report on Form 10-K for the year ended December 31, 2019, which is available on our corporate website at [www.exone.com](http://www.exone.com). Stockholders may also obtain copies of exhibits without charge by contacting our General Counsel and Corporate Secretary at (724) 863-9663.

Pursuant to the rules and regulations of the SEC, we have filed certain agreements as exhibits to this Annual Report on Form 10-K. These agreements may contain representations and warranties by the parties. These representations and warranties have been made solely for the benefit of the other party or parties to such agreements and may have been qualified by disclosures made to such other party or parties, were made only as of the date of such agreements or such other date(s) as may be specified in such agreements and are subject to more recent developments, which may not be fully reflected in our public disclosure, may reflect the allocation of risk among the parties to such agreements and may apply materiality standards that are different from what may be viewed as material to investors. Accordingly, these representations and warranties may not describe our actual state of affairs at the date hereof and should not be relied upon.

## Signatures

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

The ExOne Company

By: /s/ John F. Hartner  
John F. Hartner  
*Chief Executive Officer*

Date: March 12, 2020

Pursuant to the requirements of the Exchange Act, 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                                         | Date           | Title                                                                                        |
|---------------------------------------------------|----------------|----------------------------------------------------------------------------------------------|
| <u>/s/ John F. Hartner</u><br>John F. Hartner     | March 12, 2020 | Chief Executive Officer<br>(Principal Executive Officer)                                     |
| <u>/s/ Douglas D. Zemba</u><br>Douglas D. Zemba   | March 12, 2020 | Chief Financial Officer<br>(Principal Financial Officer and<br>Principal Accounting Officer) |
| <u>/s/ S. Kent Rockwell</u><br>S. Kent Rockwell   | March 12, 2020 | Director                                                                                     |
| <u>/s/ John Irvin</u><br>John Irvin               | March 12, 2020 | Director                                                                                     |
| <u>/s/ Gregory F. Pashke</u><br>Gregory F. Pashke | March 12, 2020 | Director                                                                                     |
| <u>/s/ Lloyd A. Semple</u><br>Lloyd A. Semple     | March 12, 2020 | Director                                                                                     |
| <u>/s/ William Strome</u><br>William Strome       | March 12, 2020 | Director                                                                                     |
| <u>/s/ Roger Thiltgen</u><br>Roger Thiltgen       | March 12, 2020 | Director                                                                                     |
| <u>/s/ Bonnie K. Wachtel</u><br>Bonnie K. Wachtel | March 12, 2020 | Director                                                                                     |

# STOCKHOLDER AND CORPORATE INFORMATION

## Annual Meeting of Stockholders

May 13, 2020  
10:00am EDT  
The ExOne Company  
127 Industry Boulevard  
North Huntingdon, PA 15642 USA

## Common Stock

NASDAQ: XONE

## Corporate Headquarters

127 Industry Boulevard  
North Huntingdon, PA 15642 USA  
+1 724 863 9663

## Investor Relations

**Douglas D. Zemba**  
Chief Financial Officer  
+1 724 765 1331  
douglas.zemba@exone.com

**Karen Howard**  
Kei Advisors LLC  
+1 716 843 3942  
khoward@keiadvisors.com

## Independent Registered Public Accounting Firm

Schneider Downs & Co., Inc.  
Pittsburgh, Pennsylvania

## Registrar / Transfer Agent

Please direct questions about lost certificates, change of address and changes in registered ownership to the Company's transfer agent and registrar:

**American Stock Transfer & Trust Company**  
Operations Center  
6201 15th Avenue  
Brooklyn, NY 11219 USA  
+1 800 937 5449

## Board of Directors

**S. Kent Rockwell** <sup>1,2</sup>  
Chairman and Chief Executive Officer  
Rockwell Venture Capital, Inc.  
(investment firm)

**John Irvin** <sup>1,2</sup>  
Director  
Senior Advisor, Rockwell Forest Products, Inc.

**Gregory F. Pashke** <sup>1,2,3,5</sup>  
Independent Director  
President, Pashke Consulting  
(strategic, tactical and valuation consulting company)

**Lloyd A. Semple** <sup>1,2,4,5</sup>  
Independent Lead Director  
Former Professor of Law  
Detroit Mercy School of Law

**William F. Strome** <sup>1,2,3,4,5</sup>  
Independent Director  
Adjunct Professor  
Duquesne University

**Roger W. Thiltgen** <sup>1,2,4,5</sup>  
Independent Director  
President, Tanglewood Resort Properties, Inc.

**Bonnie K. Wachtel** <sup>1,2,3,4</sup>  
Independent Director  
Principal, Wachtel & Co., Inc. (investment firm)

1 – Annual term expiring at 2020 Annual Meeting  
2 – Nominated for reelection at 2020 Annual Meeting  
3 – Audit Committee  
4 – Compensation Committee  
5 – Nominating and Governance Committee

## Executive Officers

**John F. Hartner**  
Chief Executive Officer

**Loretta L. Benec**  
General Counsel & Corporate Secretary

**Charlie Grace**  
Chief Customer Officer

**Rick Lucas**  
Chief Technology Officer

**Douglas D. Zemba**  
Chief Financial Officer & Treasurer



Investor information is available on the  
Company's website: [www.exone.com](http://www.exone.com)

# LET'S SOLVE THE TOUGHEST PROBLEMS. AND CHANGE THE WORLD.



## About Us

ExOne is the pioneer and global leader in binder jet 3D printing technology. Since 1995, we've been on a mission to deliver powerful 3D printers that solve our customers' toughest problems and enable world-changing innovations. Our 3D printing systems quickly transform powder materials – including metals, sand, ceramics, and composites – into precision parts, metalcasting molds and cores, and innovative tooling solutions.

1-877-773-9663



Industrial customers use our technology to save time and money, reduce waste, increase their manufacturing flexibility, and deliver designs and products that were once impossible. As home to the world's leading team of binder jetting experts, ExOne also provides specialized 3D printing services, including on-demand production of mission-critical parts, as well as engineering and design consulting. [Follow us on Twitter @ExOneCo.](#)