ExOne Co
Form 10-K
March 22, 2016

UNITED STATES

SECURITIES AND EXCHANGE COMMISSION

WASHINGTON, DC 20549

FORM 10-K

(Mark One)

x ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the fiscal year ended December 31, 2015

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	46-1684608
(State or Other Jurisdiction of Incorporation or Organization)	(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	Name of Each Exchange On Which Registered
Common Stock, par value $0.01 per share	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 x

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 x

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 x No ¨

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted 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 and post such files). Yes x No ¨

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. x

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

Large accelerated filer ¨	Accelerated filer x
Non-accelerated filer ¨ (Do not check if a smaller reporting company)	Smaller reporting company ¨

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Securities Exchange Act of 1934). Yes ¨ No x

The aggregate market value of common stock held by non-affiliates for the last business day of the registrant's most recently completed second fiscal quarter was approximately $116.3 million.

As of March 22, 2016, 16,067,954 shares of common stock, par value $0.01 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 2016 Annual Meeting of Stockholders ("Proxy Statement") are incorporated by reference into Part III of this Annual Report on Form 10-K.

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EXPLANATORY NOTE

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

On January 1, 2013, 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. We refer to this as the “Reorganization.” As a result of the Reorganization, The Ex One Company, LLC became the Company, a Delaware corporation, the common and preferred interest holders of The Ex One Company, LLC became holders of common stock and preferred stock, respectively, of the Company and the subsidiaries of The Ex One Company, LLC became the subsidiaries of the Company. The preferred stock of the Company was converted into common stock on a 9.5 to 1 basis (1,998,275 shares of common stock) immediately prior to our initial public offering (“IPO”).

On February 6, 2013, the Company’s Registration Statement on Form S-1, as amended (File No. 333-185933) was declared effective for the Company’s IPO, pursuant to which the Company registered the offering and sale of 6,095,000 shares of our common stock at a public offering price of $18.00 per share for an aggregate offering price of $109.7 million. The IPO closed on February 12, 2013.

On September 9, 2013, we commenced a secondary public offering of 3,054,400 shares of our common stock at a price to the public of $62.00 per share, of which 1,106,000 shares were sold by us and 1,948,400 were sold by selling stockholders (including consideration of the exercise of the underwriters’ over-allotment option). The secondary offering closed on September 13, 2013.

All consolidated financial information in this report includes the accounts of ExOne, its wholly-owned subsidiaries, ExOne Americas LLC (United States), ExOne GmbH (Germany), ExOne KK (Japan); effective in August 2013, ExOne Property GmbH (Germany); effective in March 2014, MWT—Gesellschaft für Industrielle Mikrowellentechnik mbH (Germany); effective in May 2014, ExOne Italy S.r.l (Italy); effective in July 2015, ExOne Sweden AB (Sweden); and through March 27, 2013 (see further description below), two variable interest entities (“VIEs”) in which ExOne was identified as the primary beneficiary, Lone Star Metal Fabrication, LLC (“Lone Star”) and Troy Metal Fabricating, LLC (“TMF”).

All financial information for periods prior to January 1, 2013 is of The Ex One Company, LLC, our predecessor company, and its subsidiaries, and all financial information for periods prior to March 27, 2013, include TMF and Lone Star, two VIEs in which ExOne was identified as the primary beneficiary.

IMPLICATIONS OF BEING AN EMERGING GROWTH COMPANY

We qualify as an “emerging growth company” (“EGC”) as defined in the Jumpstart Our Business Startups Act of 2012 (the “JOBS Act”). An EGC may take advantage of specified reduced reporting requirements and is relieved of certain other significant requirements that are otherwise generally applicable to public companies.

As an EGC:

- We are exempt from the requirement to obtain an attestation and report from our independent registered public accounting firm on the assessment of our internal control over financial reporting pursuant to the Sarbanes-Oxley Act of 2002, or the Sarbanes-Oxley Act;
- We are permitted to provide less extensive disclosure about our executive compensation arrangements;
- We are not required to give our stockholders non-binding advisory votes on executive compensation or golden parachute arrangements; and

- We have elected to use an extended transition period for complying with new or revised accounting standards.

We will continue to operate under these provisions until December 31, 2018, or such earlier time that we are no longer an EGC. We would cease to be an EGC if we have more than $1.0 billion in annual revenues, qualify as a “large accelerated filer” under the Securities Exchange Act of 1934, as amended (the “Exchange Act”), which requires us to have more than $700 million in market value of our common stock held by non-affiliates, or issue more than $1.0 billion of non-convertible debt over a three-year period. We may choose to take advantage of some, but not all, of these reduced burdens.

TRADEMARKS, SERVICE MARKS AND TRADE NAMES

We have registrations in the United States for the following trademarks: EXONE, X1 ExOne Digital Part Materialization (plus design), EXCAST, EXMAL, EXTEC, LUXCELIS, M-FLEX, ORION, S MAX, S-PRINT, X1 and X1-LAB. We also have applications for registration pending for the following trademarks: EXERIAL, INNOVENT, M-PRINT and S-MAX. We also have registrations for EXONE in China, Europe (Community Trade Mark), Japan, and South Korea, and an application for registration pending in Canada for that trademark. We have registrations for X1 ExOne Digital Part Materialization (plus design) in China, Europe (Community Trade Mark), Japan, and South Korea, and applications for registration pending in Brazil and Canada for that mark. We have a registration for the mark X1 in Europe (Community Trade Mark). We have a registration for the mark EX-1 in Europe (Community Trade Mark). We have registrations for a stylized form of X1 in Europe (Community Trade Mark) and South Korea. We

have registrations for DIGITAL PART MATERIALIZATION in Japan and South Korea and an application pending for that mark in Canada. We have a registration for the trademarks EXERIAL, INNOVENT, M-FLEX and S-MAX in Europe (Community Trade Mark). We also have a registration in Canada for the trademark LUXCELIS. Additionally, in March 2014 we acquired the trade names for Machin-A-Mation Corporation ("MAM") and MWT — Gesellschaft für Industrielle Mikrowellentechnik mbH ("MWT").

This Annual Report on Form 10-K also contains 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.

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," "assu "continue," "remain," "maintain," "sustain," "seek," "achieve," as well as similar expressions, or future or conditional verbs su 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: timing and length of sales of three dimensional ("3D") printing machines; risks related to global operations including effects of foreign currency and risks related to the situation in the Ukraine; our ability to qualify more industrial materials in which we can print; the availability of skilled personnel; the impact of increases in operating expenses and expenses relating to proposed investments and alliances; our strategy, including the expansion and growth of our operations; the impact of loss of key management; our plans regarding increased international operations in additional international locations; sufficiency of funds for required capital expenditures, working capital, and debt service; the adequacy of sources of liquidity; 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; demand for aerospace, automotive, heavy equipment, energy/oil/gas and other industrial products; individual customer contractual requirements; the scope, nature or impact of alliances and strategic investments and our ability to integrate strategic investments; 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 effect of litigation and contingencies; the impact of disruption of our manufacturing facilities or production service centers ("PSCs"); the adequacy of our protection of our intellectual property; material weaknesses in our internal control over financial reporting; the impact of customer specific terms in machine sale agreements on the period in which we recognize revenue; the impact of market conditions and other factors on the carrying value of long-lived assets; and our ability to continue as a going concern.

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.

PART I

Item 1. Business.

The Company

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 nine PSCs, which are located in the United States, Germany, Italy, Sweden and Japan. We build 3D printing machines at our facilities in the United States and Germany. We also supply the associated materials, including consumables and replacement parts, and other services, including training and technical support that is 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 printing capacity (as measured by build box size and printhead speed) uniquely position us to serve the needs of industrial customers.

Our 3D printing machines use our binder jetting technology, powdered materials, chemical binding agents and integrated software to print 3D products directly from computer models by repeatedly depositing very thin layers of powdered materials and selectively placing chemical binding agents to form the printed product. One of our key industry advantages is that our 3D printing machines are able to print products in materials which we believe are desired by industrial customers. Currently, our 3D printing machines are able to manufacture casting molds and cores from specialty sands and ceramics, which are the traditional materials for these casting products. Of equal importance, our 3D printing machines are capable of direct product materialization by printing industrial metals, including stainless steel, bronze, iron, bonded tungsten, IN Alloy 625 and glass. We are in varying stages of qualifying additional industrial materials and advancing materials that are printable in our 3D printing machines. Our current emphasis is related to monolithic metals and certain ceramics.

We believe that we are a leader in providing 3D printing machines, 3D printed and other products, materials and services to industrial customers in the aerospace, automotive, heavy equipment, energy/oil/gas and other industries. In an effort to further solidify this position, we have (i) expanded our PSC network to nine global locations, (ii) increased capacity and upgraded technology in our production facilities in Germany, including consolidating our operations from five buildings to one multi-purpose manufacturing, research and development, sales and administrative facility, (iii) expanded our materials development initiatives and (iv) deployed the first phase of an Enterprise Resource Planning (“ERP”) system for our Europe operations to promote operational efficiency and financial controls.

Our revenue growth is driven by increasing customer acceptance of our 3D printing technology. We believe that we can accelerate customer adoption of our technology by delivering turnkey 3D printing services and products, from design through product completion. In developing our next generation 3D printing machine platforms, we successfully focused on achieving the volumetric output rate demanded by our industrial customers. Our refined strategic focus emphasizes all phases of the production cycle, notably enhancements to pre-print, such as Computer Aided Design (“CAD”), simulation, and design optimization, as well as post-print processing, including metal finishing technologies and precision casting capabilities. We are exploring a combination of strategic investments, and/or alliances, some of which we believe will promote advances in pre-print and post-print processing.

We conduct a significant portion of our business with a limited number of customers. Our top five customers represented approximately 19.0%, 23.1% and 25.5% of total revenue for 2015, 2014 and 2013, respectively. There were no customers for 2015, 2014 or 2013 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, with the timing of such sales dependent on the customer's capital budgeting cycle, which may vary from period to period. The nature of the 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 are high volume, but generally result in a significantly lower aggregate price per order as compared to 3D printing machine sales. The nature of the revenue from 3D printed and other products, materials and services does not leave us dependent upon a single or a limited number of customers.

The Company manages its business globally in a single 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 subsidiaries in the United States, Germany, Italy, Sweden and Japan.

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 purchased by another company. In 2007, we were acquired by S. Kent Rockwell through his wholly-owned company Rockwell Forest Products, Inc. On January 1, 2013, our Reorganization was completed when The Ex One Company, LLC

was merged with and into a newly created Delaware corporation, which changed its name to The ExOne Company. On February 12, 2013, we completed our IPO, raising approximately $90.4 million in net proceeds after expenses to us. On September 13, 2013 we completed a secondary public offering, raising an additional $64.9 million in net proceeds after expenses to us.

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 increasingly being 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 poised to displace traditional manufacturing methodologies in a growing range of industrial applications. Our 3D printing process differs from other forms of 3D printing processes, in that we use a chemical binding agent and focus on industrial products and materials.

ExOne and 3D Printing

We provide 3D printed and other products, materials and services primarily to industrial customers and other end-market users. We believe that we are an early entrant into the AM industrial products market and are one of the few providers of 3D printing solutions to industrial customers in the aerospace, automotive, heavy equipment and energy/oil/gas industries.

Our binder jetting 3D printing technology was developed over 15 years ago by researchers at MIT. Our 3D printing machines build or print products from CAD by depositing successive thin layers of particles of materials such as sand or metal powder 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 glass or metals, or for use in specific applications, may need varying amounts of heat treating, drying or other post-processing.

Pre-Print. We believe that our customers have the opportunity to take greater advantage of the design freedom that our 3D printing technology provides. While we 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 believe that additional pre-print capabilities would empower our customers to fully exploit the design freedom of 3D printing. As a result, we are exploring ways to develop, through a combination of strategic investments, and/or alliances, advanced CAD, simulation and design optimization tools. With these enhanced pre-print capabilities, our customers will be able to imagine, design, optimize and produce their ideal products, unconstrained by the limitations imposed by traditional manufacturing technologies.

Industrial Materials. As we experience increased demand for our products globally, it is essential that the material supply chain and distribution channels match and be in close proximity to our current and prospective customers. To ensure that such a supply chain exists or quickly develops, we may vertically integrate the supply of our print media.

In addition, for the highest quality printed products, the sand grains and metal particles used in the 3D printing process must be uniform in size and meet very specific tolerances. Vertically integrating would have the additional advantage of ensuring that our PSCs and 3D printing machine customers have certainty of access to the highest quality print media, meeting the exact specifications of our 3D printing machines.

Our Machines. Our 3D printing machines consist of a build box that includes a machine platform and a computer processor controlling the printheads for applying layers of industrial materials and binding agents. We currently build our 3D printing machines in both Germany and the United States. Our 3D printing machines are used to produce molds for castings, products for end users and prototypes. In some situations, we can make prototypes in metal rather than resin polymer, or make a part from a mold for the casting of a newly designed part, which we then cast at a qualified foundry. As a result, the prototype can be made from the same material as the final production part, which allows for more accurate testing of the prototype. We provide a broad spectrum of qualified materials for direct product materialization and are continuing to qualify additional materials for use in our printing process.

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. For example, the manufacture of an aircraft requires several complex parts, such as transmission housings (also known as gear-casings), which are needed in relatively low volume and have a high performance value in the aircraft. There are also a variety of machine parts made in traditional machining processes that can be made more cheaply using those processes. Over time, we may be able to manufacture some of those parts more cost effectively. Our technology is not appropriate for the mass production of simple parts, such as injection molded parts or 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 ever expect to use our technology to make simple, low-cost, mass-produced parts.

The bulk of our 3D printing machines are used to make complex sand molds, which are used to cast these kinds of parts for several industries; although, in some cases, we make the end part directly. We intend to expand the direct part production segment of our business as we grow. In addition, as our technologies advance and our unit cost of production decreases, we believe that we can increase the type and number of products that our 3D printing machines can manufacture in a cost-effective manner, expanding our addressable market. The latest generation in our machine portfolio allows customers to engage with our binder jetting technology for industrial series production, beyond the rapid prototyping and small batch production for which our other systems are being used.

Post-Print Processing. After a product is printed, the bound and unbound powder in the build box requires curing of the chemical binding agent. In the case of molds and cores, curing generally occurs at room temperature and the printed product is complete after the binder is cured. For certain applications, 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 have identified and work with high quality foundries, and we are exploring ways to enhance the quality of precision castings in order to drive additional demand for our molds and cores and the machine platforms that print them. In conjunction with precision foundry capabilities, we believe that our casting technology offers a number of advantages over traditional casting methods, including increased yield, weight reduction and improved thermal range.

For other materials, such as stainless steel, bronze, iron and bonded tungsten, the product needs to be 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 direct materialization capabilities enable customers to develop the ideal design for products, free of the design constraints inherent in traditional manufacturing, in the industrial metal of choice and in a more efficient manner than traditional manufacturing methods.

Customers and Sales

Educating Our Customers

Educating our customers and raising awareness in our target markets about the many uses and benefits of our 3D printing 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 PSCs. We also seek to expose key potential users to our products through our PSCs, installed machines at customers' locations, university programs, and sales and marketing efforts.

Production Service Centers

We have established a network of nine PSCs in North Huntingdon, Pennsylvania; Troy, Michigan; Houston, Texas; Auburn, Washington; North Las Vegas, Nevada; Gersthofen, Germany, Desenzano del Garda, Italy; Jönköping, Sweden, and Kanagawa, Japan. Our five PSCs located in the United States were certified to ISO 9001:2008 as Industrial Additive Manufacturers. Through our PSCs, we provide sales and marketing and delivery of support and printing services to our customers. At our PSCs, our customers see our 3D printing machines in operation and can evaluate their production capabilities before ordering (i) a 3D printing machine or (ii) a printed product or service. The PSCs are scalable and have a well-defined footprint that can be easily replicated to serve additional regional markets. As described below, placing our PSCs in strategic locations around the world is an important part of our business

strategy.

For all customers, we offer the following support and services through our PSCs:

- Pre-production Collaboration. Our pre-print services include data capture using software that enables customers to translate their product vision into a digital design format that can be used as an input to our 3D printing equipment. We help our customers successfully move from the design stage to the production stage, and help customers evaluate the optimal design and industrial materials for their production needs. For example, we worked with a customer to design and manufacture parts that eliminated significant weight from a helicopter, which was possible because of the precision of our AM process. Our 3D printing machines are also able to deliver a replacement for a product broken by the customer rapidly or often immediately because we will already have the production computer file. Using subtractive manufacturing would take significantly longer.
- Consumables. We provide customers with the inputs used in our 3D printing machines, including tools, printing media/industrial materials, and bonding agents.

- Training and Technical Support. Our technicians train customers to use our 3D printing machines through hands-on experience at our PSCs and provide field support to our customers, including design assistance, education on industrial materials, operations and printing training, instruction on cleaning, and maintenance and troubleshooting.
- Replacement Parts and Service. We generally offer a twelve month warranty with the sale of a 3D printing machine to a customer. Thereafter, we offer a variety of service and support plans.

Our Competitive Strengths

We believe that our competitive strengths include:

- Volumetric Output Rate. We believe that our 3D printing machines provide 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 printhead speed and 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. For example, the machine cost per cubic inch for our mid-size Flex machine is approximately 5% of the comparable machine cost of its predecessor model, assuming a constant 80% utilization rate over a five-year period. 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 size of the build box area and the platform 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. The Exerial is one of the largest commercially available 3D printing build platforms at 3,168 liters. The Exerial is uniquely equipped with two build boxes, each 1.5 times larger than the single build box in our next largest model, the S-Max, a 1,260-liter platform machine, resulting in a total print volume of approximately 2.5 times that of the S-Max. We believe that our technology and experience give us the potential to develop large build 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 cater to the varying demands of our customers. Our two largest platforms, the Exerial and S-Max machines, are differentiated from the machines of our competitors in their ability to print in an industrial size and scale. Our Innovent size platform provides a small build box for both lab work and qualification, as well as small part production.
- Industrial Materials. Currently, our 3D printing machines are able to manufacture casting molds and cores from specialty sands and ceramics, which are the traditional materials for these casting products. Of equal importance, our 3D printing machines are capable of direct product materialization by printing in industrial metals, including stainless steel, bronze, iron, bonded tungsten, IN Alloy 625 and glass. We are in varying stages of qualifying additional industrial materials and advancing materials that are printable in our machines. Our current emphasis is related to monolithic metals and certain ceramics.
- Chemical Binding. We 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. As an example, in order to increase the print speed of laser-based technologies, another expensive industrial laser must be added to the manufacturing process, raising the unit cost of production.
- International Presence. Since our inception, we have structured our business to cater to major international markets. We have established one or more PSCs in each of North America, Europe and Asia. 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.
- Co-location of High Value Production. Over the last few years, many United States industrial manufacturers have outsourced products supply or otherwise created long, relatively inflexible supply chains for their high-complexity, high-value products. We believe that over the next few years, many of these companies will need to build these products in the United States, near their main manufacturing facilities, in order to be competitive domestically and internationally. We believe we are well positioned to help these manufacturers co-locate the production of products

so as to optimize our customers' supply chains.

Our Business Strategy

The principal elements of our growth strategy include:

- Qualify New Industrial Materials Printable In Our Systems. Our 3D printing machines are used for both development and commercial printing. We believe certain of our customers are interested in printing materials for their own development or other interests without regard to utilizing our post- processing methods. We have qualified for printing for production by customers or in our PSCs the following direct printed materials: 420 stainless steel infiltrated with bronze;

316 stainless steel infiltrated with bronze; iron infiltrated with bronze; IN Alloy 625; bronze; bonded tungsten and glass. We have also qualified silica sand and ceramics for indirect printing. We are in varying stages of qualifying additional industrial materials and advancing materials that are printable in our machines. Our current emphasis is related to monolithic metals and certain ceramics. These qualified materials are distinguishable from printable materials in that they are commercially available for sale in industrial densities or for finished products printed at our PSCs. Our 3D printing machines are used for both development and commercial printing. Additional materials printable in our printing systems include cobalt-chrome, IN Alloy 718, iron-chrome-aluminum, 17-4 stainless steel, 316 stainless steel and tungsten carbide. By expanding both qualified and printable materials, we believe we can expand our market share and better serve our industrial customer base. During 2013, we established our ExOne Materials Application Laboratory ("ExMAL"), which focuses principally on materials testing. In 2015, we qualified a new application for our additive manufacturing process, Water Wash-out Tooling, designed to aid in the development of manufacturing and composite tooling through ExMAL. We believe ExMAL will continue to assist us in increasing the rate at which we are able to qualify new materials and applications.

- Increase the Efficiency of Our Machines to Expand the Addressable Market. We intend to invest in further developing our machine technology so as to increase the volumetric output per unit of time that our machines can produce. In 2011, we began selling a new second generation mid-sized platform, the S-Print machine. In 2013, we began selling our new M-Flex machine. In 2014, we began selling our S-Max+ and M-Print machines. In 2015, we began selling our Innovent and Exerial machines. In each case, the new machines are designed to increase the volumetric output per unit of time through advances in printhead speed and build box size. The Exerial machine is unique compared to ExOne's predecessor systems in that it contains multiple industrial stations that allow for continuous production and simultaneous processing and is targeted at larger scale production. Achieving improved production speed and efficiency will expand our potential market for our 3D printing machines and for products made in our PSCs.
- Focus Upon Customer Training and Education to Promote Awareness. As part of our ExOne Training and Education Center ("ExTEC") we have supplied 3D printing equipment to numerous universities and research institutions in an effort to expand the base of future adopters of our technology. At ExTEC, technicians guide our current and prospective customers in the optimal use of 3D printing and customers gain digital access to our 3D printing knowledge database as it continues to evolve. We make ExTEC accessible to universities, individual customers, employees/trainees, designers, engineers and others interested in 3D printing. We will continue to educate the marketplace about the advantages of 3D printing. In addition to using ExTEC and our regional PSCs to educate our potential customers, in 2014 we launched the ExTEC Academy in order to advance technical expertise, training and service support for our customer base. Our ExTEC Academy targets not only binder jetting awareness but training of customers and technicians in operations and service. We currently offer ExTEC Academy instruction on indirect printing and machine operation in Gersthofen, Germany, with plans to expand our ExTEC Academy offerings into locations in the United States and Japan. In 2015, we also opened a new state-of-the-art Design and Re-Engineering for Additive Manufacturing ("DREAM") center located within our North Huntingdon, Pennsylvania facility. The DREAM center was strategically developed as a physical and virtual site for collaboration with customers to explore and incorporate the benefits of our binder jetting technology. By providing global access to our creative technical expertise and offering the most advanced software currently available, the DREAM center enables customers to create designs of metal components which maximize the benefits of additive manufacturing. The DREAM center is expected to be a catalyst for the 3D production of parts without the limitations of traditional manufacturing.
- Reducing Overall Costs of Operating Our Machines. We continue to reduce costs associated with operating our 3D printing machines. We seek to qualify lower cost printing materials, including binder, sand and powdered metals, as well as lower cost replacement parts for our 3D printing machines. We use a variety of means, including traditional supply chain and development projects, to reduce those costs. We believe as we lower 3D printing machine run costs we will improve adoption rate by forming more cost efficient production processes.

- Advance Pre-Print Design and Post-Print Processing Capabilities to Accelerate the Growth of Our 3D Printing Technology. Our next generation 3D printing machine platforms have achieved the volumetric output rate and quality necessary to serve industrial markets on a production scale. We believe that there is an opportunity to similarly advance the pre-print and post-print processing phases of product materialization to more fully exploit the transformative power of our 3D printing machines and drive growth. These opportunities relate to both direct and indirect product materialization. For direct printing production, we believe that enhancing pre-print processes, notably design optimization tools and suitable print material availability, can greatly accelerate our capture of market share in the near-term. Additionally, enhancements to post-print processing will increase the applications for printed products. Through ExMAL, we are developing post-print processing technologies to achieve fully dense product materialization without the need for infiltration, and we are exploring technology sharing partnerships to further this initiative. In indirect production utilizing 3D printed molds and cores, advanced performance casting technologies can be leveraged to increase yields and reduce weight of casted products. To address the market opportunity and fill the execution gap, we have developed a suite of processes, many of which are proprietary, for producing high-quality castings through a process that we call ExCast. ExCast provides industry guidance and support through all stages of production, from CAD at the design stage, through the 3D materialization of molds and cores, casting of the end product and rapid delivery to the end-user.
- Expand the Network of Production Service Centers. Our PSCs provide a central location for customer collaboration and provide customers with a direct contact point to learn about our 3D printing technology, purchase products printed by us, and purchase our 3D printing machines. We plan to focus on the utilization and productivity of our existing PSC network, and to consider the appropriate global expansion to match our perceived demand for production as well as prototyping. During 2015 we expanded our PSC network to include Jönköping, Sweden situated in southern Sweden. This PSC was established in collaboration with Swerea, the Swedish Research Institute for Industrial Renewal and Sustainable Growth. In 2015, we installed 3D printing machines and began direct metal printing capabilities in our existing PSCs located in Germany and Japan. Each of our nine PSCs are located in a major industrial center near existing and potential customers. We continuously monitor both customer and market trends in assessing the opportunity to further expand our global PSC network.
- Pursue Growth Opportunities Through Alliances and/or Strategic Investments. We intend to opportunistically identify and, through alliances and/or strategic investment, integrate and advance complementary businesses, technologies and capabilities. Our goal is to expand the functionality of our products, provide access to new customers and markets, and increase our production capacity.

Our Machines and Machine Platforms

We produce a variety of 3D printing machines in order to enable designers and engineers to rapidly, efficiently, and cost-effectively design and produce industrial prototypes and production parts. The models of our 3D printing machines differ based on the materials in which they print, build box size, and production speeds, but all utilize our advanced technology and designs. The variation in the models of 3D printing machines that we produce allows for flexibility of use based on the needs of our customers.

Exerial. The Exerial is our newest indirect 3D printing machine. It is unique compared to our other indirect 3D printing systems in that it contains multiple industrial stations that allow for continuous production and simultaneous processing. The Exerial is distinctly equipped with two build boxes, each 1.5 times larger than the single build box in our next largest model, the S-Max. Notably, the Exerial system offers a total build platform of 3,168 liters and is expected to be capable of printing output rates nearly four times faster than the S-Max. The Exerial utilizes a new recoater system, multiple printheads and automation controls. As part of the development of the Exerial, we have filed six patents related to machine design elements. We formally debuted this 3D printing machine at the GIFA International Foundry Trade Fair in Dusseldorf, Germany in June 2015 and began selling this machine in 2015.

S-Max/S-Max+. The S-Max machine is our second largest indirect 3D printing machine presently available. We introduced the S-Max machine in 2010 to provide improved size and speed over the predecessor model, the S-15. The

S-Max has a build box size of 1,800mm x 1,000mm x 700mm. The S-Max machine is generally used by customers interested in printing complex molds and cores on an industrial scale for casting applications. Each of our global PSCs has at least one S-Max machine installed on-site. In addition to our traditional S-Max machine, during 2014 we introduced an S-Max+ configuration designed for easier post-processing of the build box for certain applications which require phenolic or sodium silicate binder for printing.

S-Print/M-Print. The S-Print (indirect) and M-Print (direct) machines are our mid-sized 3D printing machines presently available. Both the S-Print and M-Print have a build box size of 800mm x 500mm x 400mm. The S-Print machine is generally used by customers interested in printing objects made from silica sand and ceramics, with a particular focus on industrial applications for smaller casting cores that are often required for the aerospace industry, especially in hydraulic applications. The build box size also permits the use of exotic and expensive print materials, such as ceramics, that are required for high heat/high strength applications. The M-Print machine is generally used by customers interested in direct printing of objects made from metals and glass. We have installed both S-Print and M-Print machines in certain of our PSCs to complement our S-Max machines currently in use.

M-Flex. The M-Flex machine is our most flexible direct 3D printing machine presently available. We introduced the M-Flex machine platform in 2013 to satisfy the demand for a large range of industrial customers that are interested in directly printing metals, ceramic and glass products. We have further developed a collaborative process for assisting the users in production implementation through our ExTEC and ExMAL organizational efforts. The M-Flex has a build box size of 400mm x 250mm x 250mm.

Innovent. The Innovent is the smallest of our direct 3D printing machines presently available. We introduced the Innovent machine in 2014 to provide improved size and speed over the predecessor model, the X1-Lab. As an industrial-grade, laboratory-sized machine, Innovent allows for testing material properties, specifically in educational institutions, research laboratories, and research and development departments at commercial organizations. Innovent is uniquely designed in that it balances a specific build box for the technical qualification of materials with a smaller overall lab machine platform size, when compared to other industrial-grade 3D printing machines. Innovent offers a build volume that is eight times larger than the previous X1-Lab model – measuring at 65mm x 160mm x 65mm.

MWT Microwave. We manufacture industrial grade microwaves to be used in conjunction with our 3D printing systems for thermally processing certain sand molds or cores that are 3D printed using binders, such as phenolic binder, that require a drying process. Our microwave technology improves casting quality and reduces production costs for customers in specific industries, such as magnesium parts for aviation and steel alloy parts for hydraulic components. Our microwaves are customized designs and work with various of our systems, including Exerial, S-Max+ and S-Print.

Binding

We use liquid chemical binding agents (including furan, phenolic and sodium silicate) during the 3D printing process. We initially introduced the availability of phenolic binding agent in July 2013, which binder is used with ceramic sands in the 3D printing of molds and cores, offering customers three primary benefits as compared with other binders:

- Casting higher heat alloys;
- Creating a higher strength mold or core; and
- Improving the quality of the casting due to reduced expansion of the mold or core.

These capabilities address challenges faced by the automotive, aerospace, heavy equipment and energy/oil/gas industries.

In September 2015, we expanded our suite of 3D printing binder offerings to add a new class of phenolic binding agent, referred to as cold hardening phenolic ("CHP"). The CHP binder accelerates the 3D printing process by eliminating the infrared heating lamp that is utilized in the printing process with traditional phenolic binders. Using CHP, the polymerization of 3D printed molds and cores may occur at room temperature, further reducing both printing and curing time and eliminating the need for additional equipment such as a microwave. Alternatively, if additional drying is desired this may be achieved in a conventional air oven, equipment which is maintained by most

industrial manufacturers. Our initial introduction of CHP is through delivery to customers of benchmark and production parts printed in our Gersthofen, Germany PSC. We are in the process of optimizing our indirect printing machine platforms for utilization of CHP in 2016.

Sodium silicate reduces or eliminates the release of fumes and gas in the casting process, helping to reduce costs associated with air ventilation and electrical and maintenance equipment, which we believe will appeal to casting houses that are in search of cleaner environmental processes.

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. As an example, in order to increase the print speed of laser-based technologies, another expensive industrial laser must be added to the manufacturing process, raising the unit cost of production.

Marketing and Sales

We market our products under the ExOne brand name in our three major geographic regions — North America, Europe and Asia. 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, all of our product and service offerings provided by our PSCs 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 PSCs.

Acquisitions

The Company made two acquisitions in March 2014.

On March 3, 2014, our ExOne Americas LLC subsidiary acquired substantially all the assets of MAM, a specialty machine shop located in Chesterfield, Michigan, for an aggregate purchase price of approximately $4.9 million. The purpose of this acquisition was to complement our existing PSC in Troy, Michigan, by expanding our post-processing capabilities.

On March 6, 2014, our ExOne GmbH subsidiary acquired all of the shares of MWT, a pioneer in industrial-grade microwaves with leading design and manufacturing experience based in Elz, Germany, for approximately $4.8 million. The purpose of this acquisition was to complement our existing indirect 3D printing machine systems with microwave technologies which enhance our post-processing offerings available to customers. During 2015, we took the step to integrate our MWT microwave manufacturing operation with our Gersthofen, Germany manufacturing operations.

Our Customers

Our customers are located primarily in North America, Europe and Asia. 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 several Fortune 500 companies that are leaders in their respective markets. The primary industries that we currently serve are:

- Aerospace;
- Automotive;
- Heavy equipment; and
- Energy/oil/gas.

We conduct a significant portion of our business with a limited number of customers. Our top five customers represented approximately 19.0%, 23.1% and 25.5% of total revenue for 2015, 2014 and 2013, respectively. There were no customers for 2015, 2014 or 2013 that individually represented 10.0% or greater of 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, with the timing of such sales dependent on the customer's capital budgeting cycle, which may vary from period to period. The nature of the 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 are high volume, but generally result in a significantly lower aggregate price per order as compared to 3D printing machine sales. The nature of the revenue from 3D printed and other products, materials and services does not leave us dependent upon a single or a limited number of customers.

For 3D printing machines, our terms of sale vary by transaction. To reduce credit risk in connection with 3D printing machine sales, we may, depending upon the circumstances, require certain amounts be prepaid. In some circumstances, we may require payment in full and may require international customers to furnish letters of credit. For 3D printed and other products and materials, our terms of sale generally require payment within 30 to 60 days after delivery, although we also recognize that longer payment periods are customary in some countries where we transact

business. Services arrangements are generally billed in accordance with specific contract terms which typically correspond to performance of the related services.

Services and Warranty

We have fully trained service technicians to perform machine installations in North America, Europe and Asia. We generally provide an industry standard twelve month warranty on sales of 3D printing machines. Customers can purchase additional service contracts for maintenance and service. We also sell replacement parts which we maintain in stock worldwide to assist in providing service expeditiously to our customers.

Suppliers

Our largest suppliers in 2015, based upon dollar volume of purchases, were Bauer GmbH & Co KG, Erhardt & Leimer GmbH, Bosch Rexroth AG, Fuji Film Dimatix, Astro Manufacturing & Design, Sciullo Machine and T&S Materials.

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 though 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 approximately $7.3 million, $8.2 million and $5.1 million on research and development during 2015, 2014 and 2013, respectively. We expect to continue to invest significantly in research and development in the future.

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

- 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;
- Mechanics of spreading powders in a job box;
- 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 time.

Intellectual Property

Patents and MIT Licenses. Our technology is covered by a variety of patents or licenses for use of patents. We are the worldwide licensee of certain patents of 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). Additionally, we hold patents solely as majority owner, as a result of our own technological developments. Our patents are 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 hold process patents and have applied for other patents for equipment, processes, materials and 3D printing applications. The expiration dates of our patents range from 2016 to 2031. We believe that the expiration of patents in the near term will not impact our business.

The MIT Patents under which we are licensed have expiration dates ranging from 2017 to 2021 in the United States. We believe that the expiration of these licenses will not impact our business; however, the expiration may allow our competitors that were previously prevented from doing so to utilize binder jetting 3D printing. Nonetheless, 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.

We entered into an Amended and Restated Exclusive Patent License Agreement with MIT in June 2011. The terms of the amended agreement required that we remit both license fees and royalties to MIT based upon net sales of licensed products, processes and consumables. The term of the agreement commenced on January 1, 2011, and was to remain in force until the expiration or abandonment of all issued patent rights.

On January 22, 2013, we agreed with MIT to an amendment of its exclusive patent license agreement. The Amended MIT License Agreement provides for, among other things, (i) a reduction in the term of the agreement between us and MIT from the date of expiration or abandonment of all issued patent rights to December 31, 2016, (ii) an increase in the annual license maintenance fees due for the years ended December 31, 2013 through December 31, 2016 from

$50,000 annually to $100,000 annually, with amounts related to 2013 through 2016 guaranteed by us, (iii) a settlement of all past and future royalties on net sales of licensed products, processes and consumables for a one-time payment of $200,000 (paid in March 2013), and (iv) a provision for optional extension of the term of the arrangement between the parties for an annual license maintenance fee of $100,000 for each subsequent year beyond 2016.

Trademarks. We have registrations in the United States for the following trademarks: EXONE, X1 ExOne Digital Part Materialization (plus design), EXCAST, EXMAL, EXTEC, LUXCELIS, M-FLEX, ORION, S MAX, S-PRINT, X1 and X1-LAB. We also have applications for registration pending for the following trademarks: EXERIAL, INNOVENT, M-PRINT and S-MAX. We also have registrations for EXONE in China, Europe (Community Trade Mark), Japan, and South Korea, and an application for registration pending in Canada for that trademark. We have registrations for X1 ExOne Digital Part Materialization (plus design) in China, Europe (Community Trade Mark), Japan, and South Korea, and applications for registration pending in Brazil and Canada for that mark. We have a registration for the mark X1 in Europe (Community Trade Mark). We have a registration for the mark EX-1 in Europe (Community Trade Mark). We have registrations for a stylized form of X1 in Europe (Community Trade Mark) and South Korea. We have registrations for DIGITAL PART MATERIALIZATION in Japan and South Korea and an application pending for

that mark in Canada. We have a registration for the trademarks EXERIAL, INNOVENT, M-FLEX and S-MAX in Europe (Community Trade Mark). We also have a registration in Canada for the trademark LUXCELIS. Additionally, in March 2014 we acquired the trade names for Machin-A-Mation Corporation ("MAM") and MWT — Gesellschaft für Industrielle Mikrowellentechnik mbH ("MWT").

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 nondisclosure 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.

Competition

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

- Direct metal deposition;
- Direct metal laser sintering;
- Electron beam melting;
- Fused deposition modeling;
- Laser consolidation;
- Laser sintering;
- Multi-jet modeling;
- Polyjet;
- Selective laser melting;
- Selective laser sintering; and
- Stereolithography.

Some of the companies that have developed and employ one or more AM technologies include: 3D Systems Corporation, Stratasys Inc., Voxeljet AG, EOS Optronics GmbH, EnvisionTEC GmbH and Solid Model Ltd.

Some of these processes and companies compete with some of the products and services that we provide. Despite the challenging competitive landscape, we believe that we are the only AM printing solutions provider that focuses primarily on industrial applications on a production scale. Our competitive advantages, including the size of our build platforms, the speed of our printheads, the variety of materials used by industrial manufacturers in which we can print, the industry qualification of many of the materials we print in, our robust market capabilities, and our suite of machine system families offering scale and flexibility, also serve to differentiate us from the other competitors in the AM market.

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 gains recognition. 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.

Seasonality

Purchases of our 3D printing machines often follow a seasonal pattern owing to the capital budgeting cycles of our customers. Generally, 3D printing machine sales are higher in our third and fourth quarters than in our first and second quarters.

Backlog

At December 31, 2015, our backlog was approximately $16.5 million, of which, approximately $15.8 million is expected to be fulfilled during the next twelve months. At December 31, 2014, our backlog was approximately $13.2 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 the competitive position of us and our subsidiaries. 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, 2015, we employed a total of 311 (275 full-time) employees at our eleven global locations. None of these employees is a party to a collective bargaining agreement, and we believe our relations with them are good.

Product and Geographic Information

Refer to Note 19 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”.

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 (the “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 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 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, 2015, which is available on our corporate website at www.exone.com. Stockholders may also obtain copies of exhibits without charge by contacting our Executive Vice President, Chief Legal Officer and Corporate Secretary at (724) 863-9663.

Item 1A. Risk Factors.

RISK FACTORS

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 significantly increase the number of materials in which we can print products fast enough to meet our business plan.

Our business plan is heavily dependent upon our ability to steadily increase the number of qualified materials in which our machines can print products. Our 3D printing machines are capable of direct product materialization by printing in industrial metals, including stainless steel, bronze, iron, bonded tungsten, IN Alloy 625 and glass. We are in varying stages of qualifying additional industrial materials and advancing materials that are printable in our machines. By expanding into these other materials, we believe we can expand our market share and better serve our industrial customer base. Qualifying new materials is a complicated engineering task, and there is no way to predict whether, or when, any given material will be qualified. If we cannot hire people with sufficient technical skills to work on qualifying new materials for printing, or if we lack the resources necessary to create a steady flow of new materials, we will not be able to meet our business plan goals and a competitor may emerge that is better at qualifying new materials, either of which would have an adverse effect on our business results.

Any future success in qualifying new materials for printing may attract more competitors into our markets, including competitors with greater financial, technical, marketing, and other resources than we have.

If we succeed in qualifying a growing number of materials for use in our 3D printing machines, that will increase our addressable market. However, as we create a larger addressable market, our market may become more attractive to other 3D printing companies or large companies that are not 3D printing companies, but which may see an economic opportunity in the markets we have created. Because we are a supplier of 3D printed products to industrial companies, an increase in the number of competitors for our addressable market is likely to adversely affect our business and financial results.

We may not be able to adequately increase demand for our products.

Our business plan is built around a steady increase in the demand for our products. However, only a relatively small number of our potential customers know of the existence of AM and are familiar with its capabilities, and even fewer understand the potential benefits of using AM to manufacture products. If we do not develop effective strategies to raise awareness among potential customers of the benefits of AM and 3D printing, we may be unable to achieve our planned rate of growth, which could adversely affect our results of operations.

We may not be able to 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. In addition, as we move into new geographic areas, we will need to recruit skilled employees in those areas. 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.

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. Because our business is changing and evolving rapidly, our historical operating results may not be useful in predicting our future operating results. A significant portion of our machine orders are typically received during the third or fourth quarter of the fiscal year as a result of the timing of capital expenditures of our customers. Thus, revenues and operating results for any future period are not predictable with any significant degree of certainty. We also typically experience weaker demand for our machines in the first and second quarters. For these reasons, 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:

- The degree of market acceptance of our products;
- The mix of products that we sell during any period;
- Our long sales cycle;
- Generally weaker demand for machines in the first and second quarters;
- Development of competitive systems by others;
- Our response to price competition;
- Delays between our expenditures to develop and market new or enhanced machines and products and the generation of sales from those products;
- 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;
- General economic and industry conditions that affect end-user demand and end-user levels of product design and manufacturing, including the adverse effects of the current economic crisis affecting Europe;
- Changes in accounting rules and tax laws; or
- Changes in interest rates that affect returns on our cash balances and short-term investments.

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.

We may not be able to generate operating profits.

Since our inception, we have not generated operating profits. In the event that we are unable to execute on our business plan, we may be unable to generate profits in the future.

Our operating expenses (which include research and development and selling, general and administrative expenses) were approximately $29.9 million (excluding approximately $4.4 million of a goodwill impairment charge), $32.2 million and $21.2 million for 2015, 2014, and 2013, respectively. Our research and development expenses are due primarily to continued investment in our 3D printing machine technology and costs associated with our materials qualification activities, including research and development headcount. Our selling, general and administrative expenses are due primarily to personnel costs associated with managing a public company and certain professional service fees (including legal, audit and other consulting expenses). 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.

We may incur future impairment charges to our long-lived assets held for use.

As a result of continued operating losses and cash flow deficiencies, during 2015 we completed certain tests for the recoverability of long-lived assets held for use at the asset group level. Assessing the recoverability of long-lived assets held for use requires significant judgments and estimates by management. We will be required to conduct additional testing for the recoverability of long-lived assets held for use to the extent that a triggering event requiring such test 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 for use. 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.

Our independent registered public accounting firm 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, our independent registered public accounting firm may conclude, in connection with the audit of our consolidated financial statements that there is substantial doubt regarding our ability to continue as a going concern. 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 the Company may not be able to continue.

We may not be able to introduce new machines and related industrial materials acceptable to the market or to improve the technology and industrial materials used in our current machines.

Our revenues are derived from 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 our 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 new industrial materials in 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:

- Enhance our existing products and technologies;
- Continue to leverage advances in industrial printhead technology;
- Develop new products and technologies that address the increasingly sophisticated and varied needs of prospective end-users, particularly with respect to the physical properties of industrial materials and other consumables;
- 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.

ExOne 3D printing machine customer contractual requirements often have specific, individual needs that may in turn impact the period in which we recognize the revenue under accounting principles generally accepted in the United States of America ("GAAP") relating to that 3D printing machine sale.

Once a customer makes the decision to purchase a 3D printing machine from us, we may then be required to address specific, individual factors relating, among other things, to that customer's purchase, its intended use of that 3D printing machine or relating to the installation of that machine in the customer's facilities. These specific, individual requirements are often required by the customer to be included in our commercial agreements relating to the purchase. 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.

If the market does not develop as we expect, our revenues may stagnate or decline.

The marketplace for industrial manufacturing is dominated by conventional manufacturing methods that do not involve AM technology. If AM technology does not gain market acceptance as an alternative for industrial

manufacturing, or if the marketplace adopts AM based on a technology other than our technology, we may not be able to increase or sustain the level of sales of our products and 3D printing machines and our results of operations would be adversely affected as a result.

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 do not carry key-man insurance on any member of management.

Our business is subject to risks associated with doing business globally.

Sales outside of the United States were 50.9%, 51.9% and 63.0% for 2015, 2014 and 2013, respectively. In addition, one of our growth strategies is to pursue additional opportunities for our business in several areas of the world outside of the United States, any or all of which could be adversely affected by the risks set forth below. Our operations outside of the United States are subject to risks associated with the political, regulatory and economic conditions of the countries in which we operate, such as:

- 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;
- 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;
- Tariffs, trade barriers and other regulatory or contractual limitations on our ability to sell or develop our products in certain foreign markets; and
- Becoming subject to the laws, regulations and court systems of many jurisdictions.

Any of these factors could materially adversely affect sales of our products to global customers or harm our reputation, which could adversely affect our results of operations. In addition, the consequences of terrorism or armed conflicts are unpredictable, and we may not be able to foresee events that could have an adverse effect on our market opportunities or our business.

Continuing political instability in the Ukraine, sanctions against Russia, and Russia's response to those sanctions, could materially adversely affect our business, results of operations and financial condition.

In March 2014, the Crimea region of the Ukraine was annexed by Russia. In response to this annexation and subsequent hostilities aimed at the Ukraine, other nations, including the United States and the European Union, imposed evolving economic sanctions against Russia. United States and European concerns related to the political and military conditions in the region have prompted increasing levels of economic sanctions, targeting certain Russian companies in the finance, energy and defense industries and named Russian nationals that have been deemed to have direct involvement in destabilizing the situation in the Ukraine, as well as imposing restrictions on trading and access to capital markets ("Russian Sanctions"). In response, Russia announced its own trading sanctions against nations that implemented or supported the Russian Sanctions, including the United States and some European Union nations.

One of our growth strategies is to pursue opportunities for our business in several areas of the world outside of the United States. This strategy includes pursuing opportunities in Russia through our German subsidiary, ExOne GmbH, which has sold products and services (including 3D printing machines) to customers located in Russia.

ExOne GmbH is subject to the Russian Sanctions, primarily those imposed by the European Union, specifically Germany, related to doing business in Russia. The Russian Sanctions may delay or prevent ExOne GmbH's ability to collect on existing or future accounts receivable from customers in Russia, to make future sales and to service existing ExOne equipment in Russia or to sell and deliver spare parts and consumables for our machines located in Russia.

In the event that the United States' and the European Union's political relationships with Russia further deteriorate, it is possible that additional and even more severe sanctions could be imposed by the United States or European Union against Russia or that Russia could impose additional retaliatory measures in response to current or future Russian Sanctions. These possible additional sanctions and measures could further disrupt or prevent our ability to do any business in Russia, may further increase the economic uncertainty in the affected regions and lead to further fluctuation in the value of foreign currencies, such as the Euro, used in these regions.

Our international operations pose currency risks, which may adversely affect our operating results.

Our operating results may be affected by volatility in currency exchange rates and our ability to effectively manage our currency transaction and translation risks. In general, we conduct our business, earn revenue and incur costs in the local currency of the countries in which we operate. As a result, our international operations present risks from currency exchange rate fluctuations. The financial condition and results of operations of each of our foreign operating subsidiaries are reported in the relevant local currency 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. Therefore, 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.

In the future, we may not benefit from favorable exchange rate translation effects, and unfavorable exchange rate translation effects may harm our operating results. In addition to currency translation risks, we incur currency transaction risks whenever we enter into either a purchase or a sale transaction using a different currency from the currency in which we receive revenues. In such cases we may suffer an exchange loss because we do not currently engage in currency swaps or other currency hedging strategies to address this risk.

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.

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

At December 31, 2015, S. Kent Rockwell, our Chairman and CEO, beneficially owned approximately 21.8% of our outstanding shares of common stock. On January 11, 2016, we entered into a subscription agreement with an entity under common control by Mr. Rockwell resulting in the issuance of an additional 1,423,877 shares of our common stock to the related entity. Immediately following this issuance, Mr. Rockwell beneficially owned approximately 28.8% of our outstanding shares of common stock. As a result of his ownership percentage in our common shares, Mr. Rockwell may have effective control over the election of our Board of Directors 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 of Mr. Rockwell.

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 meet the 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 noncompliance 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 CEO and our controlling stockholder, recently provided capital to us through a related entity, he has no obligation to do so and our stockholders

should have no expectation that he will do so in the future.

On January 8, 2016, we announced our entry into an At Market Issuance Sales Agreement ("ATM") with FBR Capital Markets & Co. ("FBR") and MLV & Co. LLC ("MLV") pursuant to which FBR and MLV will act as distribution agents in the sale of up to $50.0 million in the aggregate of ExOne common equity in "at the market offerings" as defined in Rule 415 under the Securities Act of 1933, as amended (the "Securities Act"). Our ability to raise capital through the use of our ATM may be restricted for various reasons, including our adherence with SEC regulations prohibiting the sale of our common equity securities for certain periods of time or other adverse market conditions.

We are highly dependent upon sales to certain industries.

Our revenues of 3D printing machines and products have historically been concentrated to companies in the aerospace, automotive, heavy equipment, and energy/oil/gas industries and those industries' respective suppliers. To the extent any of these industries experience a downturn, our results of operations may be adversely affected.

For example, the energy/oil/gas industry is highly cyclical and demand for our products and services in such industry is substantially dependent on the level of expenditures by the industry for the exploration, development and production of crude oil and natural gas reserves, which are sensitive to oil and natural gas prices and generally dependent on the industry's view of future oil and gas prices. Crude oil prices have dropped precipitously since September 2014. As oil and gas companies reduce planned capital spending in light of the decline in commodity prices, our results of operations may be adversely affected.

Additionally, if any of these industries or their respective suppliers or other providers of manufacturing services develop new technologies or alternatives to manufacture the products that are currently manufactured using our 3D printing machines, it may adversely affect our results of operations.

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 manage the expansion of our operations effectively in order to achieve our projected levels of growth.

We have expanded our operations significantly in recent periods, and our business plan calls for further expansion over the next several years. We anticipate that further development of our infrastructure and an increase in the number of our employees will be required to achieve our planned broadening of our product offerings and customer base, improvements in our 3D printing machines and materials used in our 3D printing machines, and our planned international growth. In particular, we must increase our marketing and services staff to support new marketing and service activities and to meet the needs of both new and existing customers. Our future success will depend in part upon the ability of our management to manage our growth effectively. If our management is unsuccessful in meeting these challenges, we may not be able to achieve our anticipated level of growth which would adversely affect our results of operations.

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

We may from time to time engage in strategic transaction 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 completed two acquisitions in the first quarter of 2014 and are currently exploring a combination of strategic investments, and/or alliances, some of which we believe will promote advances in pre-print and post-print processes. With respect to strategic investments, and/or alliances we are currently pursuing, 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 ExOne 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, including investments in our sales and marketing and product development organizations, and in infrastructure. 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.

Global economic, political and social conditions have adversely impacted our sales and may continue to do so.

The uncertain direction and relative strength of the global economy, difficulties in the financial services sector and credit markets, continuing geopolitical uncertainties and other macroeconomic factors all affect spending behavior of potential end-users of our products. The prospects for economic growth in the United States and other countries (particularly countries within Europe, Russia, India and China) remain uncertain and may cause end-users to further delay or reduce technology purchases. The recent global financial crisis affecting the banking system and financial markets has resulted in a tightening of credit markets, lower levels of liquidity in many financial markets and extreme volatility in fixed income, credit, currency and equity markets. These conditions may make it more difficult for our end-users to obtain financing.

As a global company, we may be adversely affected by violations of the FCPA, similar anti-bribery laws in other jurisdictions in which we currently or may in the future operate, or various international trade and export laws.

Our business plan envisions that we will conduct increasing amounts of business outside of the United States, which will create various domestic and foreign regulatory challenges. The Foreign Corrupt Practices Act of 1977, as amended (the "FCPA"), and similar anti-bribery laws in other jurisdictions generally prohibit United States-based companies and their intermediaries from making improper payments to non-United States officials for the purpose of obtaining or retaining business. We have policies and controls in place designed to ensure internal and external compliance with these and other anti-bribery laws. To ensure compliance, our anti-bribery policy and training on a global basis provides our employees with procedures, guidelines and information about anti-bribery obligations and compliance. Further, we require our partners, subcontractors, agents and others who work for us or on our behalf to comply with anti-bribery laws. We also have procedures and controls in place designed to ensure internal and external compliance. However, such anti-bribery policy, training, internal controls, and procedures will not always protect us from reckless, criminal or unintentional acts committed by our employees, agents or other persons associated with us. If we are found to be in violation of the FCPA or other anti-bribery laws (either due to the intentional or inadvertent acts of our employees, or due to the intentional or inadvertent acts of others), we could suffer criminal or civil penalties, including monetary damages or other sanctions, which could have a material adverse effect on our business. In addition, actual or alleged violations could damage our reputation and adversely affect our results of operations.

We rely on our information technology 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 depend on our information technology ("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 superior 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 could significantly limit our ability to manage and operate our business efficiently. These systems are 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 results of operations.

Regulations related to conflict-free minerals may cause us to incur additional expenses and may create challenges with our customers.

The Dodd-Frank Wall Street Reform and Consumer Protection Act contains provisions to improve transparency and accountability regarding the use of "conflict" minerals mined from the Democratic Republic of Congo (the "DRC") and adjoining countries. These conflict minerals include tantalum, tin, gold or tungsten. The SEC has established annual disclosure and reporting requirements for those companies who manufacture or contract to manufacture certain products containing conflict minerals sourced from the DRC and adjoining countries. These requirements could adversely affect the sourcing, supply and pricing of tantalum, tin, gold or tungsten used in our products. As there may be only a limited number of suppliers offering conflict-free minerals, we cannot ensure that we will be able to obtain these conflict-free minerals in sufficient quantities or at competitive prices. Compliance with these requirements may also increase our costs, including costs that may be incurred in conducting due diligence procedures to determine the

sources of certain minerals used in our products and other potential changes to products, processes or sources of supply as a consequence of such verification activities. In addition, we may face challenges with our customers if we are unable to sufficiently verify the origins of the minerals used in our products.

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 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 may not have adequate insurance for potential liabilities.

In the ordinary course of business, we may be subject to various product and non-product related claims, lawsuits and administrative proceedings seeking damages or other remedies arising out of our commercial operations. We maintain insurance to cover our potential exposure for most claims and losses. However, our insurance coverage is subject to various exclusions, self-retentions and deductibles, may be inadequate or unavailable to protect us fully, and may be cancelled or otherwise terminated by the insurer. Furthermore, we face the following additional risks under our insurance coverage:

- We may not be able to continue to obtain insurance coverage on commercially reasonable terms, or at all;
- We may be faced with types of liabilities that are not covered under our insurance policies, such as environmental contamination or terrorist attacks, and that exceed any amounts that we may have reserved for such liabilities;
- The amount of any liabilities that we may face may exceed our policy limits and any amounts we may have reserved for such liabilities; and
- We may incur losses resulting from interruption of our business that may not be fully covered under our insurance policies.

Even a partially uninsured claim of significant size, if successful, could materially adversely affect our business, financial condition, results of operations and liquidity. However, even if we successfully defend ourselves against any such claim, we could be forced to spend a substantial amount of money in litigation expenses, our management could be required to spend valuable time in the defense against these claims and our reputation could suffer, any of which could adversely affect our results of operations.

If any of our manufacturing facilities or PSCs 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. Our PSCs are located in North Huntingdon, Pennsylvania; Troy, Michigan; Houston, Texas; Auburn, Washington; North Las Vegas, Nevada; Gersthofen, Germany, Desenzano del Garda, Italy; Jönköping, Sweden; and Kanagawa, Japan.

If the operations of these facilities are materially disrupted, 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.

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, Italy, Sweden and Japan, and it may be difficult for us to restrict our competitors from benefitting 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.

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, much of our key technology is not protected by patents. Since 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 generally enter into confidentiality and/or license agreements with our employees, consultants, vendors and advertisers, and generally limit access to and distribution of our proprietary information. However, we cannot provide assurance that any steps taken by us will prevent misappropriation of our trade secrets and intellectual property.

We enjoy license rights and exclusivity of certain patents and intellectual property and cannot adequately estimate the effects of their expiration upon the entrance or advancement of competitors into the AM industrial market.

We have exclusive license and non-exclusive license rights to certain patents that we utilize in the industrial market. Some of these patents expired in 2015, and others are scheduled to expire in future periods. The expiration of these patents could reduce barriers to entry into the AM industrial market, which could result in the reduction of our market share and earnings potential. We cannot adequately estimate the effect that the expiration of these patents will have upon the entrance or advancement of other AM manufacturers into the industrial market.

We may not be able to obtain patent protection or otherwise adequately protect or enforce our intellectual property rights, which could impair our competitive position.

Our success and future revenue growth will depend, in part, on our ability to protect our intellectual property. We rely primarily on patents, trademarks, and trade secrets, as well as non-disclosure agreements and other methods, to protect our proprietary technologies and processes globally. Despite our efforts to protect our proprietary technologies and processes, it is possible that competitors or other unauthorized third parties may obtain, copy, use, or disclose our technologies and processes. We cannot assure you that any of our existing or future patents or other intellectual property rights will not be challenged, invalidated, or circumvented or will otherwise provide us with meaningful protection. 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 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 be subject to alleged infringement claims.

We may be subject to intellectual property infringement claims from individuals, vendors, and other companies who have acquired or developed patents in the field of AM for purposes of developing competing products or for the sole purpose of asserting claims against us. Any claims that our products or processes infringe on 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. If we are unable to effectively defend our technologies and processes, our market share, sales and profitability could suffer, which could adversely affect our results of operations.

Certain of our employees and patents are subject to German law.

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.

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 will use the net proceeds that we have received or will receive 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 the perception that such sales could occur as a result of our recently announced "at the market offerings," other utilization of our universal shelf registration statement or otherwise 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:

- Failure to meet our targeted revenues and gross margin;
- 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;
- 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;
- The market's reaction to our reduced disclosure as a result of being an EGC under the JOBS Act;
- Threatened or actual litigation;
- Changes in our senior management; and
- General economic trends and other external factors.

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 commentary, or ceases publishing reports about us or our business.

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.

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

As a public company whose shares are listed on The NASDAQ Stock Market, we incur significant accounting, legal and other expenses that we did not incur as a private company, and these expenses will increase even more after we are no longer an EGC. We 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 have increased our legal and financial compliance costs, introduced new costs (including stock exchange listing fees and costs related to investor relations and stockholder reporting), and made 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 of Directors, our board committees or as executive officers.

As long as we remain an EGC as defined in the JOBS Act, we may take advantage of certain exemptions from various reporting requirements that are applicable to other public companies that are not EGCs. These exemptions include, but are not limited to, not being required to comply with the auditor attestation requirements of Section 404(b) of the Sarbanes-Oxley Act, less extensive disclosure obligations regarding executive compensation in our periodic reports and proxy statements, exemptions from the requirements to hold a nonbinding advisory vote on executive compensation and stockholder approval of any golden parachute payments not previously approved and an extended transition period for complying with new or revised accounting standards. We will continue to operate under these provisions for up to five years from our IPO or such earlier time that we are no longer an EGC. We would cease to be an EGC if we have more than $1.0 billion in annual revenues, qualify as a “large accelerated filer” under the Exchange Act, which requires us to have more than $700 million in market value of our common stock held by non-affiliates at the end of our second fiscal quarter, or issue more than $1.0 billion of non-convertible debt over a three-year period.

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. As a result, capital appreciation, if any, of our shares

will be investors' sole source of gain for the foreseeable future.

The right of shareholders to receive liquidation and dividend payments on our common stock is junior to the rights of holders of future 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 the shares of 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. Our Board of Directors is authorized to issue classes or series of preferred stock in the future without any action on the part of our common shareholders.

As an EGC under the JOBS Act we follow certain permitted corporate governance practices instead of the otherwise applicable SEC and NASDAQ requirements, which may result in less protection than is accorded to investors in a non-EGC.

As an EGC we follow certain corporate governance practices instead of those otherwise required by the SEC and under the listing requirements of the NASDAQ Stock Market. Following our EGC governance practices, as opposed to the requirements that would otherwise apply to a company listed on the NASDAQ Stock Market, may provide less protection to you than what is accorded to investors under the Listing Rules for the NASDAQ Stock Market applicable to non-EGC issuers and could make our common stock less attractive to investors.

As an EGC, we delay adoption of new or revised accounting standards, which may make our stock less attractive to investors and our trading price more volatile.

Pursuant to the JOBS Act, as an EGC, we have elected to take advantage of an extended transition period for any new or revised accounting standards that may be issued by the Financial Accounting Standards Board ("FASB") or the SEC, which means that when a standard is issued or revised and it has different application dates for public or private companies, we, as an EGC, will delay adoption of the standard until it applies to private companies. This may make a comparison of our financial statements with any other public company that is either not an EGC or is an EGC that has opted out of using the extended transition period difficult, as different or revised standards may be used. If some investors find our common stock less attractive as a result, there may be a less active trading market for our common stock and our stock price may be more volatile and could decline.

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.

In connection with the preparation of our consolidated financial statements for the year ended December 31, 2015, 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:

- The design and operating effectiveness of internal controls related to our financial reporting process were not sufficient to allow for accurate and timely reporting of our consolidated financial results. We did not maintain adequate control with respect to the application of GAAP. This was principally due to a lack of personnel with adequate knowledge and experience in GAAP. As a result, we recorded certain manual, post-close adjustments in order to prepare our consolidated financial statements.
- The design and operating effectiveness of internal controls related to our information technology systems was not sufficient to allow for accurate and timely reporting of our consolidated financial results. Each of our primary locations (United States, Germany, Italy, Sweden and Japan) utilizes separate and distinct information technology platforms to record, process and summarize transactions. As a result, our process to consolidate and report financial information is substantially a manual process and inherently subject to error.
- The design and operating effectiveness of internal controls related to our consolidation process and management's review of our consolidated financial results did not operate at a level of precision sufficient to allow for accurate and timely reporting of our consolidated financial results. Our consolidation process is substantially a manual process and

inherently subject to error. Further, because of internal control weaknesses identified with respect to our financial reporting process and information technology systems, management was unable to complete an adequate review of either subsidiary or consolidated financial results at a sufficient level of precision to prevent or detect misstatements. As a result, we recorded certain manual, post-close adjustments in order to prepare our consolidated financial statements.

With the oversight of senior management and our audit committee, we have put into place a comprehensive plan to remediate the underlying causes of the identified material weaknesses. Our plan throughout 2015 was, and into 2016 is, to continue to take additional steps and implement measures to remediate the underlying causes of the identified material weaknesses, including:

(i) Enhancing our global accounting and reporting process (including our global consolidation of financial information) by redesigning and strengthening the operating effectiveness of internal controls over financial reporting. This includes a detailed review of our existing processes, improvements to the design of our internal controls (including conversion of historically manual control activities to automated control activities), updating documentation related to our business process flows, internal testing of operating effectiveness of our controls and remediation activities, as necessary. This process began in mid-2014 and we expect it to continue during 2016 and beyond as a means of continuous improvement.

(ii) Evaluating our information technology systems to further integrate existing systems or invest in improvements to our technology sufficient to generate accurate and timely financial information. On January 1, 2015, we implemented the first phase of a new ERP system for our Europe operations. Despite certain difficulties encountered in the initial implementation phase of this project, resulting in a delay of the filing of our Quarterly Report on Form 10-Q for the period ended March 31, 2015, we believe that this system, when fully implemented, provides a substantial upgrade in operational and financial reporting as compared to our legacy systems. We continue to address the difficulties encountered in the initial implementation in a variety of ways, including through the direct hire of personnel and collaboration with external consultants, both with system expertise, in an effort to resolve identified issues in a timely and efficient manner. Our 2016 information technology plan includes additional upgrades or enhancements of both this system, as well as our other existing information technologies with the overall goal of a simple, common and global platform for processing, recording and analyzing financial and operational data.

(iii) Continuing to add financial personnel with adequate knowledge and experience in GAAP. In 2015, we hired a new Chief Financial Officer and new Heads of Accounting and Controlling for our Europe operations, each of whom possess extensive knowledge of GAAP and experience in working with or for a United States based multi-national operation. As part of our redesign of our global reporting structure and responsibilities, we have added additional personnel (both temporary and permanent) with requisite GAAP experience to both our United States and Europe operations during 2015. We do not expect a further significant investment in personnel in 2016.

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, 2015, 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, 2015. Furthermore, as our business continues to grow internationally, our internal controls will become more complex and will require significantly more resources and attention to remediate existing control deficiencies and improve the effectiveness of our internal controls over financial reporting. If our management cannot favorably assess the effectiveness of our internal controls over financial reporting, investor confidence in our financial results may weaken, and our share price may suffer.

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.

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. As an EGC, we will not be required to comply with Section 404(b) until we file our Annual Report on Form 10-K for the year ended December 31, 2018 with the SEC, provided we maintain our status as an EGC until December 31, 2018.

The additional measures necessary to remediate the underlying causes of our identified material weaknesses and our future compliance with Section 404(b) will require that we incur substantial accounting expense and expend significant management efforts. We cannot assure you that there will not be material weaknesses or significant deficiencies in our internal control over financial reporting in the future. 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 or significant deficiency in our internal control over financial reporting once that firm begins its Section 404(b) attestations, 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 NASDAQ, 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.

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:

- 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, including through the use of our ATM, we will 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
United States			
North Huntingdon, Pennsylvania	Corporate Headquarters, Machine Manufacturing, PSC and Machine Sales Center	Owned	67,886
Troy, Michigan	PSC	Owned	19,646
Chesterfield, Michigan	Specialty Machining	Owned	21,175
Houston, Texas	PSC	Owned	12,000
North Las Vegas, Nevada	PSC	Owned	17,240

St. Clairsville, Ohio	Research and Development	Owned	12,860
Auburn, Washington	PSC	Leased	11,600
Europe			
Gersthofen, Germany	European Headquarters, Machine Manufacturing, PSC and Machine Sales Center	Owned	200,585
Desenzano del Garda, Italy	PSC and Machine Sales Center	Leased	3,300
Jönköping, Sweden	PSC	Leased	N/A*
Asia			
Kanagawa, Japan	PSC and Machine Sales Center	Owned	18,882

* We have a cooperation agreement with Swerea SWECAST AB in Sweden which allows for the use of certain undefined operating space sufficient to support our PSC operations at the facility.

Item 3. Legal Proceedings.

ExOne and its subsidiaries 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." The following table sets forth the ranges of high and low sales prices per share of our common stock as reported on the NASDAQ Stock Market for the periods indicated. Such quotations represent inter-dealer prices without retail markup, markdown or commission and may not necessarily represent actual transactions.

Year Ended December 31, 2014	High	Low
First quarter	$70.25	$33.05
Second quarter	$42.57	$24.34
Third quarter	$48.66	$20.35
Fourth quarter	$26.46	$14.91

Year Ended December 31, 2015	High	Low
First quarter	$17.92	$13.19
Second quarter	$15.97	$11.08
Third quarter	$11.42	$5.81
Fourth quarter	$12.67	$6.50

Stockholders

As of March 7, 2016, there were 30 stockholders of record, which excludes stockholders whose shares were held in nominee or street name by brokers. The actual number of common stockholders 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 of Directors and will depend on many factors, including general economic and business conditions, our strategic plans, our financial results and conditions, legal requirements, any contractual obligations or limitations, and other factors that our Board of Directors 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, 2015:

Plan Category	Number of Securities to be Issued Upon Exercise of Outstanding Options, Warrants and Rights	Weighted-Average Exercise Price of Outstanding Options, Warrants and Rights	Number of Securities Remaining Available for Future Issuance Under Equity Compensation Plans (Excluding Securities Reflected in the First Column)[1]
Equity Compensation Plans Approved by Security Holders	210,970	$ 17.43	1,644,242
Equity Compensation Plans Not Approved by Security Holders	N/A	N/A	N/A

(1) A maximum of 1,041,021 shares of common stock were reserved for issuance under the Plan for 2015, and awards of incentive stock options and restricted stock were made in 2015 for a total of 26,000 awards. Forfeitures and expirations of previously issued awards totaled 4,167 for 2015. The Plan provides for automatic increases in the reserve available annually on January 1 from 2014 through 2023 equal to the lesser of (i) 3.0% of the total outstanding shares of common stock as of December 31 of the immediately preceding year or (ii) a number of shares of common stock determined by our Board of Directors, provided that the maximum number of shares authorized under the Plan will not exceed 1,992,241 shares, subject to certain adjustments. Based on 14,524,637 shares outstanding on December 31, 2015, an additional 435,739 shares of common stock may be reserved for issuance under the Plan for 2016 for a total of 1,454,927 being available for issuance under the Plan for 2016.

Stock Performance Graph

The following graph compares the performance of our common stock with (i) the NASDAQ Composite Index and (ii) the S&P 1500 Industrial Machinery Index. Such information shall not be deemed to be “filed.”

Company/Index	February 7, 2013	June 30, 2013	December 31, 2013	June 30, 2014	December 31, 2014	June 30, 2015	December 31, 2015
The ExOne Company	$ 100	$ 233	$ 228	$ 149	$ 63	$ 42	$ 38
NASDAQ Composite Index	$ 100	$ 108	$ 134	$ 139	$ 150	$ 158	$ 158
S&P 1500 Industrial Machinery Index	$ 100	$ 106	$ 134	$ 139	$ 137	$ 138	$ 125

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Item 6. Selected Financial Data.

The data presented in the Selected Financial Data table should be read in conjunction with the information required to be provided in Part II Item 7, “Management’s Discussion and Analysis of Financial Condition and Results of Operations” and the consolidated financial statements and related notes thereto in Part II Item 8 of this Annual Report on Form 10-K.

(dollars in thousands except per share amounts and machine unit data)	For the years ended December 31, 2015	2014	2013	2012	2011
Statement of consolidated operations and comprehensive loss data:					
Revenue - third party	$38,918	$43,029	$39,480	$28,657	$15,290
Revenue - related party	1,435	871	—	—	—
Total	$40,353	$43,900	$39,480	$28,657	$15,290
Gross profit	$8,343	$10,457	$15,573	$12,143	$3,643
Research and development	$7,279	$8,178	$5,127	$1,930	$1,531
Selling, general and administrative	$22,576	$24,029	$16,119	$18,285	$7,286
Interest expense	$152	$144	$372	$842	$1,570
Net loss attributable to ExOne	$(25,865)	$(21,843)	$(6,455)	$(10,168)	$(8,037)
Net loss attributable to ExOne per common share:					
Basic	$(1.79)	$(1.52)	$(0.51)	N/A*	N/A*
Diluted	$(1.79)	$(1.52)	$(0.51)	N/A*	N/A*
Consolidated balance sheet data:					
Working capital (deficit)**	$34,503	$58,541	$114,754	$(4,504)	$(605)
Cash and cash equivalents	$19,342	$36,202	$98,445	$2,802	$3,496
Property and equipment—net	$54,832	$55,298	$32,772	$12,467	$7,919
Goodwill	$—	$4,665	$—	$—	$—
Total assets**	$107,958	$133,127	$158,435	$32,897	$18,241
Line of credit	$—	$—	$—	$528	$—
Demand note payable to member	$—	$—	$—	$8,666	$—
Long-term debt and capital and financing lease obligations	$2,113	$2,592	$3,233	$10,566	$5,429
Redeemable preferred units	$—	$—	$—	$—	$18,984
Preferred units	$—	$—	$—	$18,984	$—
Common units	$—	$—	$—	$10,000	$10,000
Common stock	$144	$144	$144	$—	$—
Additional paid-in capital	$156,627	$154,902	$153,363	$—	$—
Total stockholders’ / members’ equity (deficit)	$89,073	$118,545	$146,700	$41	$(15,599)
Other data:					
Machine units sold:					
S-Max+	1	1	—	—	—
S-Max	7	11	13	9	1
S-Print	2	1	3	3	1
S-15	1	1	1	1	2

M-Print***	1	1	—	—	—
M-Flex	3	9	6	—	—
Innovent***	10	—	—	—	—
X1-Lab	1	4	5	—	1
Micromachinery	—	—	1	—	—
	26	28	29	13	5

* Information not comparable for 2012 and 2011 as a result of the Reorganization of the Company as a corporation on January 1, 2013. Refer to Note 1 to consolidated financial statements and related notes thereto in Part II Item 8 of this Annual Report on Form 10-K.

** Amounts relating to 2014, 2013, 2012 and 2011 have been revised as a result of our adoption of FASB guidance relating to the presentation of deferred income taxes in November 2015. Refer to Note 1 to consolidated financial statements and related notes thereto in Part II Item 8 of this Annual Report on Form 10-K.

*** During 2015, one M-Print unit and two Innovent units were sold to related parties. During 2014, one M-Print unit was sold to a related party. There were no sales of 3D printing machines to related parties during 2013, 2012 or 2011. Refer to Note 18 to consolidated financial statements and related notes thereto in Part II Item 8 of this Annual Report on Form 10-K.

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 the "Selected Financial Data" in Part II Item 6 and 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, 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, "Cautionary Statements Concerning Forward Looking Statements" and Item 1A, "Risk Factors".

Overview

Our Business

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 printed products for customers through our nine production PSCs, which are located in the United States, Germany, Italy, Sweden and Japan. We build 3D printing machines at our facilities in the United States and Germany. We also supply the associated materials, including consumables and replacement parts, and other services, including training and technical support, necessary for purchasers of our machines to print products. We believe that our ability to print in a variety of industrial materials, as well as our industry-leading printing capacity (as measured by build box size and printhead speed) uniquely position us to serve the needs of industrial customers.

2015 Developments and 2016 Outlook

Our results of operations for 2015 were negatively affected by lower than expected sales of 3D printing machines as a result of longer than expected sales cycles for certain customers and as a result, our gross profit was negatively affected based on a lower contribution margin from the sale of these units. We have additionally experienced overall increased costs of production, principally in the form of expanded facilities and personnel costs both of which were attributable to the transition and expansion of our German and United States operations and deployment of the first phase of our new ERP system for our Europe operations (both resulting in production and operational inefficiencies). Our selling, general and administrative expenses and research and development expenses have both declined in 2015, as we stabilize our operating expenses as a public company. We additionally recognized a goodwill impairment charge in 2015 in connection with completing an interim test for impairment during the quarter ended September 30, 2015, as a result of a significant decline in our market capitalization and continued operating losses and cash flow deficiencies.

Note the following operations highlights for 2015:

- Introduction of Innovent 3D printing system for research and education customers. In January 2015, we announced the introduction of our new laboratory-sized machine offering, the Innovent, which allows for testing material properties, specifically in educational institutions, research laboratories and research and development departments at commercial organizations. Compared to our previous laboratory-sized machine offering, the X1-Lab, the Innovent offers a build volume that is eight times larger and incorporates software and mechanical component upgrades that

mirror our M-Flex and M-Print platforms, allowing for integrated use of the platforms together for testing (Innovent) and prototype and series production (M-Flex or M-Print).

- Introduction of six new printable materials for use in our 3D printing systems. In February 2015, we announced the introduction of six new printable materials for use in our 3D printing systems: Cobalt-Chrome, IN Alloy 718, Iron-Chrome-Aluminum, 17-4 Stainless Steel, 316 Stainless Steel and Tungsten Carbide. The introduction of these print materials allows customers interested in 3D printing materials for their own product development the opportunity to utilize a wider variety of materials, each offering unique properties and uses.
- Transition to our new facility in Gersthofen, Germany. In 2015, we completed our transition to our new facility in Gersthofen, Germany which has resulted in approximately doubling our available facility space and has substantially increased our production capacity of indirect printing machines and PSC operations. This transition has also resulted in a full consolidation of our German production, research and development, sales and marketing and administrative teams under one combined facility.
- Expansion of our North Huntingdon, PA facility. In March 2015, we completed our expansion of our North Huntingdon, PA facility which has resulted in approximately doubling our available PSC production space for this facility and has also expanded our available space for research and development activities.

- Debut of the Exerial 3D printing system and delivery of the initial production units. In June 2015, we debuted the Exerial machine platform at the GIFA International Foundry Trade Fair in Dusseldorf, Germany. The Exerial is unique compared to our other indirect printing systems in that it contains multiple industrial stations that allow for continuous production and simultaneous processing. The Exerial is distinctly equipped with two build boxes, each 1.5 times larger than the single build box in our next largest model, the S-Max. Notably, the Exerial system offers a total build platform of 3,168 liters and is expected to be capable of printing output rates nearly four times faster than the S-Max. The Exerial utilizes a new recoater system, multiple printheads and automation controls. As part of the development of the Exerial, we have filed six patents related to machine design elements. We shipped our initial production units in June 2015.
- Qualification of Water Wash-out Tooling process for industrial 3D printing applications. In July 2015, we announced the qualification of a new application for our additive manufacturing process, Water Wash-out Tooling, designed to aid in the development of manufacturing and composite tooling. Intended for the production of hollow parts, typical of mandrel or clamshell molding, our Water Wash-out Tooling process involves the 3D printing of a core in sand, ceramics or carbon, applying a composite lay-up and curing. The final core is then washed out with only the structural composite part remaining. Water Wash-out Tooling is ideal for printing mandrels for filament winding, tape placement or hand lay-up; plugs and source tools; styling and design models; hollow or trapped shape fabrication; and one-off parts for part validation.
- Opening of the ExOne DREAM Center. In July 2015, we announced the opening of our new state-of-the-art Design and Re-Engineering for Additive Manufacturing (“DREAM”) center located in our North Huntingdon, PA facility. The DREAM center has been strategically developed as a physical and virtual site for collaboration with customers to explore and incorporate the benefits of our binder jetting technology. By providing global access to our creative technical expertise and offering the most advanced software currently available, the center will enable customers to create designs of metal components which maximize the benefits of additive manufacturing.
- Opening of our PSC in Sweden. In August 2015, we announced the opening of our ninth PSC in Jönköping, Sweden in collaboration with Swerea, the Swedish Research Institute for Industrial Renewal and Sustainable Growth. Swerea has research specialists who are leaders in the development of new technologies, methods and products for direct application in industry, with 3D printing being an area of focus. Establishing our latest PSC in this facility creates a cost effective opportunity for our introduction of binder jetting technologies to a market that is focused on the benefits of additive manufacturing for industrial applications.
- Introduction of ExOne cold hardening phenolic binder. In September 2015, we announced the expansion of the available suite of our binders to include ExOne cold hardening phenolic, or CHP. Phenolic binders, which we originally introduced in July 2013, are generally used in connection with ceramic sands to produce 3D printed molds and cores that provide the benefit of high heat alloy casting, higher internal strength and higher quality, on the basis of reduced expansion of the mold or core. CHP accelerates the 3D printing process by eliminating the infrared heating lamp that is utilized in the printing process with traditional phenolic binders. In addition, additional curing and drying processes, which previously required the use of an industrial microwave, may be achieved through use of a conventional air oven typically maintained by most industrial manufacturers. Our initial introduction of CHP is through delivery to customers of benchmark and production parts printed in our Gersthofen, Germany PSC. We are in the process of optimizing our indirect printing machine platforms for utilization of CHP with an availability date targeted in 2016.
- At market issuance offering. In January 2016, we announced our entry into our ATM with FBR and MLV pursuant to which FBR and MLV will act as distribution agents in the sale of up to $50,000 in the aggregate of ExOne common equity in “at the market offerings” as defined in Rule 415 under the Securities Act. Through March 22, 2016, we sold 91,940 shares under the ATM at a weighted average selling price of approximately $9.17 per share resulting in gross proceeds of approximately $843. Net proceeds to us from the sale of shares under the ATM during this time period were approximately $595 (after deducting offering costs of approximately $248).
- Registered direct offering to a related party. In January 2016, we announced our entry into a subscription agreement with Rockwell Forest Products, Inc. and S. Kent Rockwell for the registered direct offering and sale of 1,423,877 shares of ExOne common equity at a per share price of $9.13 (a $0.50 premium from the closing price on the close of

business on January 8, 2016). Gross proceeds from the sale of shares in this offering were approximately $13,000. Net proceeds to us from the sale of shares in this offering were approximately $12,400 (after deducting offering expenses).

With our facilities expansion substantially behind us, and our new machine platforms (Exerial, S-Max+ and Innovent) gaining market attention, we continue to focus our attention on improving the operational effectiveness of our business with the primary goal being the continued global adoption of our binder jetting technologies. This includes further expanding our business focus from predominantly prototyping activities and short-run production to series production, principally through our introduction of the Exerial machine platform. We intend to place a firm emphasis of maximizing revenues from our 3D printing machines and continuing to grow our revenues from 3D printed and other products, materials and services. We also plan to continue to effectively manage our costs of production (focusing on our print material costs and machine manufacturing costs) and operating expenses such that we align our spending plans with the anticipated growth of our business.

How We Measure Our Business

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, materials, replacement components and services (installation, training and other services, including maintenance services and/or an extended warranty). 3D printing machine sales and leasing arrangements are influenced by a number of factors including, among other things, (i) the adoption rate of our 3D printing technology, (ii) end-user product design and manufacturing activity, (iii) the capital expenditure budgets of end-users and potential end-users and (iv) 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, among others, (i) the overall low unit volume of 3D printing machine sales, (ii) the sales mix of machines for a given period and (iii) the customer-driven acceleration or delay of orders and shipments of machines.

3D printed and other products, materials and services. 3D printed and other products, materials and services consist of sales of (i) products printed in our global PSC network or manufactured through our specialty machining or ExCast strategy, (ii) consumable materials and replacement parts for the network of 3D printing machines installed by our global customer base and (iii) services for maintenance and certain research and development activities. Our PSCs utilize our 3D printing machine technology to print products to the specifications of customers. In addition, our PSCs also provide support and services such as pre-production collaboration prior to printing products for a customer. Sales of consumable materials, replacement parts and service maintenance contracts are linked to the aftermarket opportunities from our growing network of 3D printing machines installed by our global customer base. Research and development arrangements are a function of customer-specific needs in applying our additive manufacturing technologies.

Cost of Sales and Gross Profit. Our cost of sales consists primarily of labor (related to our global workforce), materials (for both the manufacture of 3D printing machines and for our PSC 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 properties, 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.

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. 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, and 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, accounting, consulting and other professional services.

Interest Expense. Interest expense consists of the interest cost associated with outstanding long-term debt and capital and financing lease arrangements. We expect our interest expense to continue to decrease as our outstanding debt is lowered over time. Included in our business strategy is the consideration of early retirement of debt (where practicable).

(Benefit) Provision for Income Taxes. Prior to our Reorganization, we were organized as a limited liability company. Under the provisions of the Internal Revenue Code and similar state provisions, we were taxed as a partnership and were not liable for income taxes. Following our Reorganization, 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, Italy, Sweden and Japan, are approximately 35.0% (including state taxes), 28.4%, 31.0%, 22.0% and 33.1%, respectively.

Results of Operations

Summary

Net loss attributable to ExOne for 2015 was $25,865 or $1.79 per basic and diluted share, compared with a net loss attributable to ExOne of $21,843 or $1.52 per basic and diluted share for 2014. The increase in our net loss was principally due to (i) a decrease in our revenues and gross profit attributed to an unfavorable mix of sales and increases in production costs associated with the expansion of our global facilities (ii) a goodwill impairment charge of $4,419 as a result of a significant decline in our market capitalization, combined with continued operating losses and cash flow deficiencies. These changes were partially offset by (i) decreases in both research and development activities (for materials qualification and machine development) and selling, general and administrative expense (due mostly to lower provisions for bad debts and selling commissions and favorable currency exchange).

Net loss attributable to ExOne for 2014 was $21,843 or $1.52 per basic and diluted share, compared with a net loss attributable to ExOne of $6,455 or $0.51 per basic and diluted share for 2013. The increase in our net loss was principally due to (i) a decrease in our gross profit attributed to an unfavorable mix of sales and increases in production costs associated with the expansion of our global facilities and (ii) an increase in operating expenses attributed to increased spending in research and development activities (for materials qualification and machine development) and selling, general and administrative expense (due to increased personnel costs and an increase in provisions for bad debts).

Revenue

The following table summarizes revenue by product line for each of the years ending December 31:

	2015		2014		2013	
3D printing machines						
3D printing machines - third party	$14,100	34.9 %	$21,977	50.1 %	$24,851	62.9 %
3D printing machines - related party	1,364	3.4 %	815	1.8 %	—	0.0 %

	15,464	38.3	%	22,792	51.9	%	24,851	62.9	%
3D printed and other products, materials and services									
3D printed and other products, materials and services - third party	24,818	61.5	%	21,052	48.0	%	14,629	37.1	%
3D printed and other products, materials and services - related party	71	0.2	%	56	0.1	%	—	0.0	%
	24,889	61.7	%	21,108	48.1	%	14,629	37.1	%
	$40,353	100.0	%	$43,900	100.0	%	$39,480	100.0	%

Revenue for 2015 was $40,353 compared with revenue of $43,900 for 2014, a decrease of $3,547 or 8.1%. This decrease was principally due to (i) decreases in revenues from 3D printing machines as a result of lower volumes (26 units sold in 2015 versus 28 units sold in 2014) and (ii) an unfavorable mix of sales of 3D printing machines based on unit type (principally a reduction in sales of S-Max units from 2014 to 2015, resulting in a lower average selling price of 3D printing machines sold). Partially offsetting this decrease was a net increase in revenue associated with 3D printed and other products, materials and services driven by (i) an overall continued increase in customer acceptance and demand for our additive manufacturing technologies, resulting in higher PSC volumes, (ii) an increase in materials and service revenues associated with an increased network of our 3D printing machines installed by our global customer base and (iii) strategic price reductions for certain of our product offerings. Unfavorable changes in currency also impacted revenues from both product lines (principally appreciation of the United States dollar against the Euro and Japanese Yen).

Revenue for 2014 was $43,900 compared with revenue of $39,480 for 2013, an increase of $4,420, or 11.2%. This increase was principally due to an increase in revenues from 3D printed and other products, materials and services driven by (i) an overall continued increase in customer acceptance and demand for our additive manufacturing technologies, resulting in higher PSC volumes, (ii) an increase in revenues associated with our ExCast activities, (iii) an increase in materials and service revenues associated with an increased network of our 3D printing machines installed by our global customer base and (iv) revenues attributable to MAM and MWT (acquired in March 2014). Offsetting this increase was a decrease in revenues from 3D printing machines as a result of a reduction in volumes (one fewer unit sold as compared to 2013) and an unfavorable mix of sales of 3D printing machines based on unit type (resulting in a lower average selling price of machines sold) for 2014 as compared to 2013.

The following table summarizes 3D printing machines sold by type for each of the years ending December 31 (please refer to Part I Item 1, “Our Machines and Machine Platforms” of this Annual Report on Form 10-K for a description of 3D printing machines by type):

	2015	2014	2013
3D printing machine units sold:			
S-Max+	1	1	—
S-Max	7	11	13
S-Print			