DMC Global Inc.
Form 10-K
March 08, 2018

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

Form 10-K
(Mark One)

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

For the fiscal year ended December 31, 2017

o TRANSITION REPORT UNDER SECTION 13 OR 15(d) OF THE SECURITIES ACT OF 1934

FOR THE TRANSITION PERIOD FROM TO

Commission file number 001-14775

DMC Global Inc.
(Exact name of Registrant as Specified in its Charter)

Delaware	84-0608431
(State of Incorporation or Organization)	(I.R.S. Employer Identification No.)

5405 Spine Road, Boulder, Colorado 80301
(Address of principal executive offices, including zip code)

(303) 665-5700
(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, $.05 Par Value	The Nasdaq Global Select Market

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

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or 15(d) of the Act from their obligations under those sections. Yes o 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 o

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 o

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§229.405 of this chapter) is not contained herein, and will not be contained, to the best of the 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. o

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

Large accelerated filer o	Accelerated filer x
Non-accelerated filer o (Do not check if smaller reporting company)	Smaller reporting company o
	Emerging growth company o

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

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

The approximate aggregate market value of the voting stock held by non-affiliates of the registrant was $152,439,264 as of June 30, 2017.

The number of shares of Common Stock outstanding was 14,905,241 as of March 8, 2018.

Certain information required by Items 10, 11, 12, 13 and 14 of Form 10-K is incorporated by reference into Part III hereof from the registrant's proxy statement for its 2018 Annual Meeting of Stockholders, which is expected to be filed with the Securities and Exchange Commission ("SEC") within 120 days of the close of the registrant's fiscal year ended December 31, 2017.

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PART I

ITEM 1. Business

References made in this Annual Report on Form 10-K to "we", "our", "us", "DMC" and the "Company" refer to DMC Global Inc. and its consolidated subsidiaries. Unless stated otherwise, all dollar figures in this report are presented in thousands (000s).

Overview

DMC Global Inc. operates two technical product and process business segments serving the energy, industrial and infrastructure markets. These segments, NobelClad and DynaEnergetics, operate globally through an international network of manufacturing, distribution and sales facilities. NobelClad is a global leader in the production of explosion-welded clad metal plates for use in the construction of corrosion resistant industrial processing equipment and specialized transition joints. DynaEnergetics designs, manufactures and distributes products utilized by the global oil and gas industry principally for the perforation of oil and gas wells. See Note 6 within Item 8 — Financial Statements and Supplementary Data for net sales, operating income, and total assets for each of our segments.

Our Strategy

Our diversified segments each provide a suite of unique technical products to niche sectors of the global energy, industrial and infrastructure markets, and each has established a strong position in the markets in which it participates. With an underlying focus on generating free-cash flow, our objective is to sustain and grow the market share of our businesses through increased market penetration, development of new applications, and research and development of new and adjacent products that can be sold across our global network of sales and distribution network. We routinely explore acquisitions of related businesses that could strengthen or add to our existing product portfolios, or expand our geographic footprint and market presence. We also seek acquisition opportunities outside our current markets that would complement our existing businesses and enable us to build a stronger and more diverse company.

Business Segments

NobelClad

Clad metal plates are typically used in the construction of heavy, corrosion resistant pressure vessels and heat exchangers. Clad metal plates consist of a thin layer of an expensive, corrosion-resistant cladder metal, such as titanium or nickel alloy, which is metallurgically welded to a less expensive structural backing metal, such as carbon steel. For heavy equipment, clad plates generally provide an economical alternative to building the equipment solely of a corrosion-resistant alloy. While a significant portion of the demand for our clad metal products is driven by maintenance and retrofit projects at existing chemical processing, petrochemical processing, oil refining, and aluminum smelting facilities, new plant construction and large plant expansion projects also account for a significant portion of total demand. These industries tend to be cyclical in nature and timing of new order inflow remains difficult to predict.

There are three major industrial clad plate manufacturing technologies: explosion welding, hot rollbonding and weld overlay. Detaclad®, NobelClad's process-controlled explosion clad, uses explosion welding, the most versatile of the clad plate manufacturing methods. Created using a robust cold welding technology, explosion-welded clad products exhibit high bond strength and combine the corrosion resistance of the cladder material with the mechanical properties and structural strength of the lower cost backer material. The explosion welding process is suitable for joining virtually any combination of common engineered metals. This represents a competitive advantage versus the hot rollbonding and weld overlay processes, which generally can only clad compatible metals such as nickel alloys and

stainless steel.

Explosion-welded clad metal is produced as flat plates or concentric cylinders, which can be further formed and fabricated into a broad range of industrial processing equipment or specialized transition joints. When fabricated properly, the two metals will not come apart, as the bond zone is generally stronger than the parent metals. The dimensional capabilities of the process are broad: cladding metal layers can range from a few thousandths of an inch to several inches in thickness and base metal thickness and lateral dimensions are primarily limited only by the capabilities of the world's metal production mills. Explosion welding is used to clad to steel a broad range of metals, including aluminum, titanium, zirconium, nickel alloys and stainless steels.

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Clad Metal End Use Markets

Explosion-welded clad metal is primarily used in the construction of large industrial processing equipment that is subject to high pressures and temperatures and/or corrosive processes. Explosion-welded clad plates also can be cut into transition joints, which are used to facilitate conventional welding of dissimilar metals. The eight broad industrial sectors discussed below comprise the bulk of demand for NobelClad's products, with oil and gas and chemical and petrochemical constituting approximately two-thirds of NobelClad sales in 2017. This demand is driven by the underlying need for both new equipment and facility maintenance in these primary market sectors.

Oil and Gas: Oil and gas end use markets include both oil and gas production and petroleum refining. Oil and gas production covers a broad scope of operations related to recovering oil and/or gas for subsequent processing in refineries. Clad metal is used in separators, glycol contractors, pipe lines, heat exchangers and other related equipment. Increased oil and gas production from deep, hot, and more corrosive fields has also increased the demand for clad equipment. The primary clad metals for the oil and gas production market are stainless steel and nickel alloys clad to steel, with some use of reactive metals, such as titanium.

Petroleum refining processes frequently are corrosive and operate at high temperatures and pressures. Clad metal is extensively used in a broad range of equipment including desulfurization hydrotreaters, coke drums, distillation columns, separators and heat exchangers. Reliance upon low-quality, high sulfur crude drives additional demand for new corrosion resistant equipment. Worldwide trends in regulatory control of sulfur emissions in gas, diesel and jet fuel are also increasing the need for clad equipment. Like the upstream oil and gas sector, the clad metals are primarily stainless steel and nickel alloys.

Chemical and Petrochemical: Many common products, ranging from plastics to prescription drugs to electronic materials, are produced by chemical processes. Because the production of these items often involves corrosive agents and is conducted under high pressures or temperatures, corrosion resistant equipment is needed. One of the larger applications for clad equipment is in the manufacture of purified terephthalic acid (PTA), a precursor product for polyester, which is used in products as diverse as carpets and plastic bottles. The chemical market requires extensive use of stainless steel and nickel alloys, but also uses titanium, zirconium and tantalum.

Alternative Energy: Some alternative energy technologies involve conditions that necessitate clad metals. Solar panels predominantly incorporate high purity polysilicon. Processes for manufacturing high purity silicon utilize a broad range of highly corrosion-resistant clad alloys. Many geothermal fields are corrosive, requiring high alloy clad separators to handle the hot steam. Some ethanol technologies may require corrosion resistant metals at thicknesses where clad is an attractive alternative.

Hydrometallurgy: The processes for production of nickel, gold, and copper involve acids, high pressures, and high temperatures; and titanium-clad plates are used extensively for construction of associated leaching and peripheral equipment.

Aluminum Production: Aluminum is reduced from its oxide in large electric smelters called potlines. The electric current is carried via aluminum conductors. The electricity must be transmitted into steel components for the high temperature smelting operations. Aluminum cannot be welded to steel conventionally. Explosion-welded aluminum-steel transition joints provide an energy efficient and highly durable solution for making these connections. Modern potlines use a large number of transition joints, which are typically replaced after approximately five years in service. Although aluminum production is the major electrochemical application for NobelClad products, there are a number of other electrochemical applications including production of magnesium, chlorine and chlorate.

Shipbuilding: The combined problems of corrosion and top-side weight drive demand for our aluminum-steel transition joints, which serve as the juncture between a ship's upper and lower structures. Top-side weight is often a significant problem with tall ships, including cruise ships, naval vessels, ferries and yachts. Use of aluminum in the upper structure and steel in the lower structure provides stability. Since aluminum cannot be welded directly to steel using conventional welding processes, and since bolted joints between aluminum and steel corrode quickly in seawater, explosion-welded transition joints are a common solution. NobelClad's transition joints have been used in the construction of many well-known ships, including the Queen Elizabeth II and modern U.S. Navy aircraft carriers.

Power Generation: Fossil fuel and nuclear power generation plants require extensive use of heat exchangers, many of which require corrosion resistant alloys to handle low quality cooling water. Our clad plates are used extensively for heat exchanger tubesheets. The largest clad tubesheets are used in the final low-pressure condensers. For most coastal and brackish water-cooled plants, titanium is the metal of choice, and titanium-clad tubesheets are the low-cost solution for power plant condensers.

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Industrial Refrigeration: Heat exchangers are a core component of refrigeration systems. When the cooling fluid is seawater, brackish, or even slightly polluted, corrosion-resistant metals are necessary. Metal selection can range from stainless steel to copper alloy to titanium. Explosion-welded clad metal is often the low-cost solution for making the tubesheets. Applications range from refrigeration chillers on fishing boats to massive air conditioning units for skyscrapers, airports, and deep underground mines.

Operations

The NobelClad segment seeks to build on its leadership position in its markets. During the three years ended December 31, 2017, 2016 and 2015, the NobelClad segment represented approximately 37%, 58% and 54% of our consolidated net sales, respectively. Our manufacturing plants and their respective shooting sites in Pennsylvania, Germany and France provide the production capacity to address concurrent projects for NobelClad’s global customer base.

In December 2017, DMC approved a plan to consolidate NobelClad's European production facilities, and expects to complete the process by the end of 2018. NobelClad centralized a portion of its European production facilities after its November 2014 purchase of a state-of-the-art manufacturing center in Liebenscheid, Germany. The facility now performs the majority of NobelClad’s European explosion cladding, although some work is still conducted at the smaller facility in Rivesaltes, France. NobelClad plans to exit the Rivesaltes production facility in the coming year, but will maintain its sales and administrative office in France. The proposed measures remain subject to consultation with the local workers council, which will be conducted in accordance with applicable French law.

The principal product of metal cladding, regardless of the process used, is a metal plate composed of two or more dissimilar metals, usually a corrosion resistant metal (the "cladder") bonded to a steel backing plate. Prior to the explosion-welding process, the materials are inspected, the mating surfaces are ground, and the metal plates are assembled for cladding. The process involves placing a sheet of the cladder over a parallel plate of backer material and then covering the cladder with a layer of specifically formulated explosive powder. A small gap or “standoff space” is maintained between the cladder and backer using small spacers. The explosion is then initiated on one side of the cladder and travels across the surface of the cladder forcing it onto the backer. The explosion happens in approximately one-thousandth of a second. The collision conditions cause a thin layer of the mating surfaces, as well as the spacers, to be spalled away in a jet. This action removes oxides and surface contaminants immediately ahead of the collision point. The extreme pressures force the two metal components together, creating a metallurgical bond between them. The explosion welding process produces a strong, ductile, continuous metallurgical weld over the clad surface. After the explosion is completed, the resulting clad plates are flattened and cut, and then undergo testing and inspection to assure conformance with internationally accepted product specifications.

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EXPLOSION-WELDING PROCESS

Explosion-welded cladding technology is a method for welding metals that cannot be joined using conventional welding processes, such as titanium-steel, aluminum-steel, and aluminum-copper. Explosion welding also can be used to weld compatible metals, such as stainless steels and nickel alloys to steel. The cladding metals are typically titanium, stainless steel, aluminum, copper alloys, nickel alloys, tantalum, and zirconium. The base metals are typically carbon steel, alloy steel, stainless steel and aluminum. Although the patents for the basic explosion-welded cladding process have expired, NobelClad has developed a proprietary knowledge of process control that distinguishes it from its competitors by maintaining high-quality and low re-work costs. The entire explosion-welding process involves significant precision in all stages, and any errors can be extremely costly as they often result in the discarding of the expensive raw material metals. NobelClad’s technological expertise is a significant advantage in preventing costly waste.

NobelClad’s metal products are primarily produced for custom projects and conform to requirements set forth in customers’ purchase orders. Upon receipt of an order, NobelClad obtains the component materials from a variety of sources based on quality, availability and cost and then produces the order in one of its three manufacturing plants. Final products are processed to meet contract specific requirements for product configuration and quality/inspection level.

Suppliers and Raw Materials

NobelClad's operations involve a range of alloys, steels and other materials, such as stainless steel, copper alloys, nickel alloys, titanium, zirconium, tantalum, aluminum and other metals. NobelClad sources its raw materials from a number of different producers and suppliers. It holds a limited metal inventory and purchases its raw materials based on contract specifications. Under most contracts, any raw material price increases are passed on to NobelClad’s customers. NobelClad closely monitors the quality of its supplies and inspects the type, dimensions, markings, and certification of all incoming metals to ensure that the materials will satisfy applicable construction codes. NobelClad also manufactures a majority of its own explosives from standard raw materials, thus achieving higher quality and lower cost.

Competition

Metal Cladding. NobelClad faces competition from two primary alternative cladding technologies: hot rollbonding and weld overlay. Usually the three processes do not compete directly, as each has its own preferential domain of application relating to metal used and thicknesses required. However, due to specific project considerations such as technical specifications, price and delivery time, explosion-welding may have the opportunity to compete successfully against these technologies. Rollbond is only produced by a few steel mills in the world. In this process, the clad metal and base metal are

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bonded during the hot rolling operation in which the metal slab is converted to plate. Being a high temperature process that yields the formation of detrimental intermetallics, hot rollbond is limited to joining similar metals, such as stainless steel and nickel alloys to steel. Rollbond's niche is production of large quantities of light to medium gauge clad plates. Rollbond products are generally suitable for most pressure vessel applications but have lower bond shear strength and may have inferior corrosion resistance.

The weld overlay process, which is used by the many vessel fabricators that are often also NobelClad customers, is a slow and labor-intensive process that requires a large amount of floor space for the equipment. In weld overlay cladding, the clad metal layer is deposited on the base metal using arc-welding type processes. Weld overlay is a cost-effective technology for complicated shapes, for field service jobs, and for production of some very heavy-wall pressure vessel reactors. During overlay welding, the cladding metal and base metal are melted together at their interface. The resulting dilution of the cladding metal chemistry may compromise corrosion performance and limit use in certain applications. Weld metal shrinkage during cooling potentially causes distortion when the base layer is thin. As with rollbond, weld overlay is limited to metallurgically similar metals, primarily stainless steels and nickel alloys joined to steel. Weld overlay is typically performed in conventional metal fabrication shops.

Explosion-Welded Metal Cladding. Competition in the explosion-welded clad metal business is fragmented. NobelClad holds a strong market position in the clad metal industry. It is the leading producer of explosion-welded clad products in North America, and has a strong position in Europe against smaller competitors. NobelClad's has mixed competition in Asia ranging from competitors with competitive technology and strong brand names to other producers which are technically limited and offer minimal exports outside of their domestic markets. To remain competitive, NobelClad intends to continue developing and providing technologically advanced manufacturing services, maintaining quality levels, offering flexible delivery schedules, delivering finished products on a reliable basis and competing favorably on the basis of price.

Customer Profile

NobelClad's products are used in critical applications in a variety of industries, including upstream oil and gas, oil refining, chemical and petrochemical, hydrometallurgy, aluminum production, shipbuilding, power generation, industrial refrigeration and other similar industries. NobelClad's customers in these industries require metal products that can withstand exposure to corrosive materials, high temperatures and high pressures. NobelClad's customers can be divided into three tiers: the product end users (e.g., operators of chemical processing plants), the engineering contractors that design and construct plants for end users, and the metal fabricators that manufacture the products or equipment that utilize NobelClad's metal products. It is typically the fabricator that places the purchase order with NobelClad and pays the corresponding invoice. NobelClad has developed strong relationships over the years with the engineering contractors, process licensors, and equipment operating companies that frequently act as buying agents for fabricators.

Marketing, Sales, Distribution

NobelClad conducts its selling efforts by marketing its services to potential customers' senior management, direct sales personnel, program managers, and independent sales representatives. Prospective customers in specific industries are identified through networking in the industry, cooperative relationships with suppliers, public relations, customer references, inquiries from technical articles and seminars and trade shows. NobelClad's sales office in the United States covers the Americas and East Asia. Its sales offices in Europe cover the full European continent, Africa, the Middle East, India, Southeast Asia, and Russia. NobelClad also has sales offices in South Korea and China to address these markets and uses contract agents to cover various other countries. Contract agents typically work under multi-year agreements which are subject to sales performance targets as well as compliance with NobelClad quality and customer service expectations. Members of the global sales team may be called to work on projects located

outside their usual territory. By maintaining relationships with its existing customers, developing new relationship with prospective customers, and educating all its customers as to the technical benefits of NobelClad’s products, NobelClad endeavors to assist in setting standard specifications, both by our customers and the American Society of Mechanical Engineers and ASTM, to ensure that the highest quality and reliability are achieved.

NobelClad’s products are generally shipped from its manufacturing locations in the United States, Germany and France. Any shipping costs or duties for which NobelClad is responsible typically will be included in the price paid by the customer. Regardless of where the sale is booked, NobelClad will produce it, capacity permitting, at the location closest to the delivery place. In the event that there is a short-term capacity issue at one facility, NobelClad can produce the order at any of its other production sites, prioritizing timing. The various production sites allow NobelClad to meet customer production needs in a timely manner. After completion of the plan to consolidate NobelClad's European production facilities, which is expected to be completed by the end of 2018, NobelClad plans to focus its European manufacturing efforts in Germany, while maintaining its sales and administrative office in France.

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Research and Development

We prepare a formal research and development plan annually. It is implemented at our cladding sites and is supervised by a technical committee that reviews progress quarterly and meets once a year to establish the plan for the following 12 months. The research and development projects concern process support, new products, new applications, and special customer-paid projects.

DynaEnergetics

DynaEnergetics designs, manufactures, markets, and sells perforating systems and associated hardware, as well as seismic explosives, for the international oil and gas industry. The oil and gas industry uses perforating products to punch holes in the casing or liner of wells and create a flow path in the formation, thereby connecting the well to the surrounding reservoir. During the drilling process, steel casing and cement are inserted into the well to isolate and support the wellbore. As part of the well completion process, the perforating guns, which contain a series of specialized shaped charges, are lowered into the well to the desired area of the targeted formation. When initiated, the shaped charges shoot a plasma jet through the casing and cement and into the formation. The resulting channels in the formation allow hydrocarbons to flow into the wellbore.

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DynaEnergetics designs, manufactures and sells all five primary components of a perforating system, which are: 1) carrier tubes and charge tubes, 2) shaped charges, 3) detonating cord, 4) detonators, and 5) control panels. In addition, DynaEnergetics has leveraged its broad product portfolio and detonator technology to create a unique factory-assembled, performance-assured well perforating system known as DynaStage™. The DynaStage system arrives fully assembled at the well, thereby reducing the customers' need for field assembly crews and associated infrastructure.

PRIMARY COMPONENTS OF A PERFORATING SYSTEM

The perforating products manufactured by DynaEnergetics are essential to oil and gas recovery. These products are sold to oilfield service companies around the world. DynaEnergetics also promotes its technologies and systems directly with end-user exploration and production companies. The market for perforating products, which are used during the well completion process, generally corresponds with oil and gas exploration and production (E&P) activity. Modern E&P activity has led to increasingly complex well completion operations, which in turn, have increased the demand for high quality and technically advanced perforating products.

Operations

The DynaEnergetics segment seeks to build on its products and technologies, as well as its sales, supply chain and distribution network. During the three years ended December 31, 2017, 2016 and 2015, the DynaEnergetics segment represented approximately 63%, 42% and 46% of our consolidated net sales, respectively.

DynaEnergetics has been producing detonating cord and detonators and selling these along with seismic explosives systems for decades. Since 1994, the business has placed significant emphasis on enhancing its offering by improving existing products and adding new products through research and development, as well as acquisitions. Today, DynaEnergetics offers a comprehensive portfolio of detonating cord, detonators, bi-directional boosters, shaped charges, and corresponding gun systems.

In recent years, DynaEnergetics has increased its development efforts and introduced several new products specifically designed for safe and selective perforating. Included among these products is the DynaSelect™ family of integrated switch-detonators. DynaSelect detonators require a specific electronic code for firing and are immune from induced currents and voltages, static electricity and high-frequency irradiation. These safety features substantially reduce the risk of unintentional detonation and enable concurrent perforating and hydraulic fracturing operations at drilling sites with multiple wellbores, improving operating efficiencies for customers.

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Our DynaSelect products integrate our earlier Selectronic Switches with our "Intrinsically Safe" Detonator technologies in a unique one-piece system for improved well site efficiency, reliability, simplicity and service quality. The fully integrated design incorporates advanced software controls and reduces the size of the detonator and switch assembly. DynaSelect reduces by 40% the number of electrical connections required within each perforating gun versus prior and competitive selective initiation systems. This improves set-up times and significantly increases reliability. The DynaSelect detonator is controlled by our Multitronic IV and V Firing Panels. This system enables safe and reliable firing of up to 20 guns and setting a plug in a single run and incorporates a shot detection function resulting in significant time and cost savings.

Our DynaStage™ factory-assembled perforating system combines all our advanced technologies into a preassembled perforating gun that can be armed at the well site with the wireless DynaStage detonator, which incorporates all of the features of the intrinsically safe DynaSelect detonator. The DynaStage system is operated using Multitronic IV and our latest Multitronic V Firing Panel, and can be tested before going down hole using our Surface Tester, reducing the risk of lost time, mishaps, misruns and misfires due to a system fault. The Multitronic V Firing Panel is highly intuitive and allows the gun string to be safely tested and monitored throughout the pump-down operation. The Multitronic V panel introduces several new features designed to ease the use and the reliability of the system, including “shoot-on-the-fly” operation through an instant-fire capability. The patent-pending plug-n-go design of the DynaStage wireless detonator reduces the potential for errors by eliminating the need for wiring and crimping.

Our DynaSlot™ perforating system is designed for well abandonment operations. During abandonment, the wellbore is encased and permanently sealed so that layers of sedimentary rock, and in particular freshwater aquifers, are pressure isolated from each other and the wellbore. The DynaSlot perforating system facilitates this process by creating access to a full 360-degree area between the rock formations and the tubing and casing. Customers use the unique, helical perforation pattern created by DynaSlot to perform cement squeeze operations that seal off the wellbore.

DynaEnergetics develops and sells a wide range of shaped charges for use in its perforating systems. These include the family of HaloFrac™ charges, which incorporate advancements in liner materials and shaped charge geometry designed to improve hydraulic fracturing performance through lower and more consistent breakdown pressures, uniform proppant placement, uniform frac clusters and higher well productivity ratios. Another line, FracTune™, delivers uniform hole diameter in the well casing independent of shot phasing and gun positioning within the well bore. DynaEnergetics also sells the DPEX™ family of charges, which feature energetic liners. All three lines can be used with the DynaStage perforating system, as well as conventional perforating gun systems across a range of gun diameters.

DynaEnergetics Tubing Conveyed Perforating, ("TCP") systems are customized for individual customer needs and well applications. TCP enables perforating of more complex highly deviated and horizontal wells. These types of wells are increasingly being drilled by the off-shore industry. TCP tools also perforate long intervals in a single trip, which significantly improves rig efficiency. Our TCP tool range includes mechanical and hydraulic firing systems, gun releases, redundant firing heads, under-balancing devices and auxiliary components. Our tools are designed to withstand downhole temperatures of up to 260 degrees Celsius (500 degrees Fahrenheit), for safe and quick assembly at the well site, and to allow unrestricted total system length.

DynaEnergetics’ manufacturing facilities are located in Germany, the United States and Russia. We completed the construction of the shaped charge manufacturing facility in Tyumen, Siberia, in 2015, and we received all the necessary permits to start production of charges in 2016. The facility was fully operational by the end of the third quarter 2016. We reopened our DynaStage assembly center in Mt. Braddock Pennsylvania in the fourth quarter of 2017. In December 2017, DynaEnergetics commenced construction of a new 74,000 square foot manufacturing,

assembly and administrative space on its manufacturing campus in Blum, Texas. The facility, which is scheduled to open during the third quarter of 2018, will substantially increase DynaEnergetics' component manufacturing and DynaStage assembly capacity. During the first half of 2018, DynaEnergetics is adding a second automated DynaSelect detonator line at its facility in Troisdorf, Germany. In the second half of 2018, the business plans to add a second automated shaped-charge manufacturing line at Blum, which will more than double its shaped charge production capacity in the U.S. These new investments will significantly expanded our global capacity for shaped charge and perforating gun production and improve our delivery and customer service capabilities in our key markets.

Suppliers and Raw Materials

DynaEnergetics' product offering consists of complex components that require numerous high-end inputs. DynaEnergetics utilizes a variety of raw materials for the production of oilfield perforating and seismic products, including high-quality steel tubes, steel and copper, explosives, granulates, plastics and ancillary plastic product

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components. DynaEnergetics obtains its raw materials primarily from a number of different producers in Germany, other European countries, and the U.S. but also purchases materials from other international suppliers.

Competition

DynaEnergetics faces competition from independent manufacturers of perforating products and from the industry's three largest oil and gas service companies, which produce most of their own shaped charges but also buy other perforating components and specialty products from independent suppliers such as DynaEnergetics. DynaEnergetics competes for sales primarily on customer service, product quality, reliability, safety, performance, price and, in North America, proximity of distribution centers to oilfield drilling activity.

Customer Profile

DynaEnergetics' perforating and seismic products are purchased by international and regional oilfield service companies of all sizes working in both onshore and offshore oil and gas fields. Our customers select perforating products based on their leading performance, system compatibility and ability to address a broad spectrum of factors, including pressures and temperatures in the borehole and geological characteristics of the targeted formation.

The customers for our oilfield products can be divided into five broad categories: purchasing centers of large service companies, international service companies, independent service companies, oil companies with and without their own service companies, and local resellers.

Marketing, Sales, Distribution

DynaEnergetics’ worldwide marketing and sales efforts for its oilfield and seismic products are located in Troisdorf, Germany, Houston, Texas, and Tyumen, Siberia. DynaEnergetics’ sales strategy focuses on direct selling, distribution through licensed distributors and independent sales representatives and educating current and potential customers about our products and technologies. Currently, DynaEnergetics sells its oilfield and seismic products through wholly-owned affiliates in Germany, the U.S., Canada, and Russia and through independent sales agents in other parts of the world. DynaEnergetics serves the Americas region through its network of sales and distributions centers in the United States and Canada.

DynaEnergetics also designs and manufactures customized perforating products for third-party customers according to their designs and requirements.

Research and Development

DynaEnergetics attaches great importance to its research and development capabilities and has devoted substantial resources to its research and development (R&D) programs. Based predominantly in Troisdorf, Germany, the R&D team works closely with sales, product management, and operations management teams to establish priorities and effectively manage individual projects. Through its ongoing involvement in oil and gas industry trade shows and conferences, DynaEnergetics has increased its profile in the oil and gas industry. In addition to its existing shaped charge test facility, which can simulate downhole, wellbore, and reservoir pressure conditions to develop and test high performance perforating charges for both oil companies and service providers, the R&D group recently commissioned a new purpose built pressure vessel which can reach 30.000 psi test pressures and be heated up to 200 degrees Celsius (392 degrees F). This enables the R&D group to support the oil and gas industry with test methods for new products which realistically simulate potentially difficult downhole conditions. An R&D plan, which focuses on new technology, products, process support and contracted projects, is prepared and reviewed at least quarterly. R&D costs are included in our cost of products sold and were $4.3 million, $4.0 million, and $2.4 million for the years ended

December 31, 2017, 2016 and 2015, respectively.

Corporate History and Recent Developments

The genesis of the Company was an unincorporated business called “Explosive Fabricators,” which was formed in Colorado in 1965. The business was incorporated in Colorado in 1971 under the name “E. F. Industries, Inc.,” which was later changed to “Explosive Fabricators, Inc.” The Company became publicly traded in 1976. In 1994, it changed its name to “Dynamic Materials Corporation.” The Company reincorporated in Delaware in 1997.

In 1976, the Company became a licensee of Detaclad, the explosion-welded clad process developed by DuPont in 1959. In 1996, the Company purchased the Detaclad operating business from DuPont.

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In 1998, the Company acquired AMK Technical Services ("AMK"), a specialty welding business.

In 2001, the Company acquired substantially all of the stock of NobelClad Europe SA, a French company (“NobelClad France”). Early in its history, NobelClad France was a licensee of the Detaclad technology. The acquisition of NobelClad France expanded the Company’s explosive metalworking operations to Europe.

In 2007, the Company acquired the German company DynaEnergetics GmbH and Co. KG (“DynaEnergetics”) and certain affiliates. DynaEnergetics was comprised of two primary businesses: explosive metalworking and oilfield products. This acquisition expanded the Company’s explosive metalworking operations in Europe and added a complementary oilfield products business.

Over the next several years the Company further grew the DynaEnergetics business by acquiring additional related sales and manufacturing companies in Canada and the United States and purchasing minority interests in certain Russian joint ventures.

In 2013, the Company branded its explosive metalworking operations under the single name NobelClad. The NobelClad segment is comprised of the Company’s U.S. clad operations as well as the explosion metalworking assets and operations purchased in the NobelClad France and DynaEnergetics acquisitions. In 2014, the Company re-branded the oilfield products segment as DynaEnergetics, which is comprised entirely of DynaEnergetics (other than its explosion metalworking operations), its subsidiaries and sister companies.

In 2014, the Company sold AMK. Also in 2014, the Company acquired a modern manufacturing and office complex in Liebenscheid, Germany. The facility enhances NobelClad's manufacturing capabilities and serves as a state-of-the-art production and administrative resource for NobelClad's European operations.

In 2016, the Company changed its name to DMC Global Inc., to reflect that we are a diversified portfolio of technical product and process businesses serving niche markets around the world.

Employees

As of December 31, 2017, we had 536 permanent and part-time employees (293 U.S. and 243 non-U.S.), the majority of whom are engaged in manufacturing operations, with the remainder primarily in sales, marketing and administrative functions. Most of our manufacturing employees are not unionized. In addition, we use a number of temporary workers at any given time, depending on the workload. We currently believe that employee relations are good.

Insurance

Our operations expose us to potential liabilities for personal injury or death as a result of the failure of a component that has been designed, manufactured, serviced, processed, or distributed by us. We maintain liability insurance that we believe adequately protects us from potential product liability claims.

Intellectual Property

Protection of Proprietary Information. We hold a variety of intellectual property through our NobelClad business, including but not limited to proprietary information and know-how, trade secrets, and registered and unregistered trademarks. Much of our proprietary manufacturing expertise lies in the knowledge of the factors that affect the quality of the finished clad product, including the types of metals to be explosion-welded, the setting of the explosion, the composition of the explosive, and the preparation of the plates to be bonded. We have developed this specialized

knowledge over our 40 years of experience in the explosive metalworking business.

We hold a variety of intellectual property through our DynaEnergetics business including but not limited to patents, patent applications, registered and unregistered trademarks, trade secrets, proprietary information and know-how. We have followed a policy of seeking patent and trademark protection in countries and regions throughout the world for products and methods that appear to have commercial significance. DynaEnergetics seeks and holds numerous patents covering various products and processes, including but not limited to perforating guns and their various components, shaped charges, packaging of explosive materials, detonating cord, and electronics. No single patent or trademark is considered to be critical to DynaEnergetics' business.

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We are careful in protecting our proprietary know-how and manufacturing expertise in both NobelClad and DynaEnergetics, and we have implemented measures and procedures to ensure that the information remains confidential.

Foreign and Domestic Operations and Export Sales

All of our sales are shipped from our manufacturing facilities and distribution centers located in the United States, Germany, France, Canada, and Russia. The following chart represents our net sales based on the geographic location to where we shipped the product, regardless of the country of the actual end user. NobelClad products are usually shipped to the fabricator before being passed on to the end user.

	(Dollars in Thousands)		
	For the years ended December 31,		
	2017	2016	2015
United States	$ 116,083	$ 78,999	$ 81,634
Canada	23,377	16,021	13,000
United Arab Emirates	1,768	7,449	7,891
France	3,032	3,744	6,624
South Korea	1,173	1,690	5,709
Germany	5,397	5,979	5,182
Russia	4,504	3,731	4,937
India	2,927	5,066	4,566
Egypt	2,721	1,942	4,080
Spain	1,126	1,500	3,858
Iraq	77	13	3,758
China	3,673	7,012	2,426
Italy	1,582	2,577	2,327
Hong Kong	255	699	2,207
Sweden	2,009	2,124	1,699
Rest of the world	23,099	20,029	17,020
Total	$ 192,803	$ 158,575	$ 166,918

Company Information

We are subject to the informational requirements of the Securities Exchange Act of 1934, as amended (the "Exchange Act"). We therefore file periodic reports, proxy statements and other information with the Securities Exchange Commission (the “SEC”). Such reports may be obtained by visiting the Public Reference Room of the SEC at 100 F Street, N.E., Washington, D.C. 20549, or by calling the SEC at 1-800-SEC-0330. In addition, the SEC maintains an Internet site at www.sec.gov that contains reports, proxy and information statements and other information regarding issuers that file electronically.

Our Internet address is www.dmcglobal.com. Information contained on our website does not constitute part of this Annual Report on Form 10-K. Our annual report on SEC Form 10-K, quarterly reports on Forms 10-Q, current reports on Forms 8-K, and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act are available free of charge on our website as soon as reasonably practicable after we electronically file such material with or furnish it to the SEC. We also regularly post information about our Company on our website under the "Investors" tab.

ITEM 1A. Risk Factors

Risk Factors Related to our NobelClad Segment

NobelClad's business is dependent on sales to a limited number of customers in cyclical markets and our results are affected by the price of metals.

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NobelClad revenues are affected both by the demand for NobelClad's explosion-welded cladding services and the base price of metal used in explosion-welded cladding operations. The explosion-welded cladding market is dependent upon sales of products for use by customers in a limited number of heavy industries, including oil and gas, chemicals and petrochemicals, alternative energy, hydrometallurgy, aluminum production, shipbuilding, rail car manufacturing, power generation, and industrial refrigeration. These industries tend to be cyclical in nature and an economic slowdown in one or all of these industries-whether due to traditional cyclicality, general economic conditions or other factors-could impact capital expenditures within that industry. In addition, metals prices affect the demand for cladded products and our margins. Higher metal prices increase demand by making it more economical for customers to use cladding on less-expensive metal than using solid metal plates. Higher metal prices also lead to higher sales (in terms of dollars rather than square meters of cladding) and generally higher margins for NobelClad. We have experienced a significant decline in the demand for clad products in recent years due in part to a low-metals price environment. If demand or metals prices do not increase or decline further, our sales would be adversely affected, which could have a material adverse effect on our business, financial condition, and results of operations.

Our backlog figures may not accurately predict future sales.

We use backlog to predict our anticipated future sales. Our year-end backlog was $37.5 million, $31.6 million, and $41.8 million in 2017, 2016 and 2015, respectively. We define "backlog" at any given point in time to consist of all firm, unfulfilled purchase orders and commitments at that time. We expect to fill most items of backlog within the following 12 months. However, since orders may be rescheduled or canceled and a significant portion of our net sales is derived from a small number of customers, backlog is not necessarily indicative of future sales levels. Moreover, we cannot be sure of when during the future 12-month period we will be able to recognize revenue corresponding to our backlog nor can we be certain that revenues corresponding to our backlog will not fall into periods beyond the 12-month horizon.

There is a limited availability of sites suitable for cladding operations.

Our cladding process involves the detonation of large amounts of explosives. As a result, the sites where we perform cladding must meet certain criteria, including adequate distance from densely populated areas, specific geological characteristics, and the ability to comply with local noise and vibration abatement regulations in conducting the process. Our shooting sites located in Pennsylvania and in Dillenburg, Germany are located in mines. We plan to discontinue our Tautavel shooting site late in 2018, and move all shooting operations in Europe to Dillenburg. This will increase the demands on the Dillenburg mine. If a mine were seriously damaged, we might not be able to locate a suitable replacement site in a timely manner to continue our operations. In addition, our primary U.S. shooting site is subleased under an arrangement pursuant to which we provide certain contractual services to the sub-landlord. The efforts to identify suitable sites and obtain permits for using the sites from local government agencies can be time-consuming and may not be successful. In addition, we could experience difficulty in obtaining or renewing permits because of resistance from residents in the vicinity of proposed sites. The failure to obtain required governmental approvals or permits could limit our ability to expand our cladding business in the future, and the failure to maintain such permits or satisfy other conditions to use the sites would have a material adverse effect on our business, financial condition and results of operations.

There is no assurance that we will continue to compete successfully against other manufacturers of competitive products.

Our explosion-welded clad products compete with explosion-welded clad products made by other manufacturers in the clad metal business located throughout the world and with clad products manufactured using other technologies. Our combined North American and European operations typically supply explosion-welded clad to the worldwide market. There is one other well-known explosion-welded clad supplier worldwide - a division of Asahi-Kasei

Corporation of Japan. There are also a number of smaller companies worldwide with explosion-welded clad manufacturing capability, including several companies in China that appear to be growing significantly in their domestic markets. Explosion-welded clad products also compete with those manufactured by rollbond and weld overlay cladding processes. The technical and commercial niches of each cladding process are well understood within the industry and vary from one world market location to another. We focus on reliability, product quality, on-time delivery performance, and low-cost manufacturing to minimize the potential of future competitive threats. However, there is no guarantee we will be able to maintain our competitive position.

The use of explosives subjects us to additional regulation, and any accidents or injuries could subject us to significant liabilities.

Our operations involve the detonation of large amounts of explosives. The use of explosives is an inherently dangerous activity. As a result, we are required to use specific safety precautions under U.S. Occupational Safety and Health Administration guidelines and guidelines of similar entities in Germany and France. These include precautions which must be tak

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en to protect employees from exposure to sound and ground vibration or falling debris associated with the detonation of explosives. There is a risk that an accident or death could occur in one of our facilities.

Explosions, even if occurring as intended, can lead to damage to the shooting site or manufacturing facility or to equipment used at the facility or injury or death to persons at the facility. Any accident could result in significant manufacturing delays, disruption of operations or claims for damages resulting from death or injuries, which could result in decreased sales and increased expenses. To date, we have not incurred any significant delays, disruptions or claims resulting from accidents at our facilities. If an accident occurred, we might be required to suspend our operations for a period of time while an investigation is undertaken or repairs are made. Such a delay might impact our ability to meet the demand for our products.

Customers have the right to change orders until products are completed.

Customers have the right to change orders after they have been placed. If orders are changed, the extra expenses associated with the change will be passed on to the customer. However, because a change in an order may delay completion of the project, recognition of income for the project may also be delayed.

Risk Factors Related to DynaEnergetics

Demand for DynaEnergetics' products is substantially dependent on the levels of expenditures by the oil and gas industry. Decreased oil and gas prices and reduced expenditures in the oil and gas industry could have a significant adverse impact on our financial condition, results of operations and cash flows.

Demand for the majority of our products depends substantially on the level of expenditures by the oil and gas industry for the exploration, development and production of oil and natural gas reserves. These expenditures are generally dependent on the industry's view of future oil and natural gas prices and are sensitive to the industry's view of future economic growth and the resulting impact on demand for oil and natural gas. From 2014 through mid-2017, oil and gas prices declined significantly, resulting in lower expenditures by the oil and gas industry during this period. As a result, many of our customers reduced or delayed their oil and gas exploration and production spending, reducing the demand for our products and exerting downward pressure on the prices that we charged and the revenues and profits we earned during this period. This resulted in DynaEnergetics' revenues in 2016 being 36.2% less than in 2014 and in 2015 being 27.0% less than in 2014. Although we have seen increased oil and gas prices and increased exploration and production spending in 2017, resulting in increased revenues for DynaEnergetics, there is no assurance that such conditions will continue.

There can be no assurance that the demand or pricing for oil and natural gas will continue at current levels or follow historic patterns. A decline in oil and gas prices could cause reductions in cash flows for our customers, which could have significant adverse effects on the financial condition of our customers. This could result in project modifications, delays or cancellations, general business disruptions, and delays in payment of, or nonpayment of, amounts that are owed to us. These effects could have a material adverse effect on our financial condition, results of operations and cash flows.

The prices for oil and natural gas have historically been volatile and can be affected by a variety of factors, including:

• demand for hydrocarbons, which is affected by general economic and business conditions;
• the ability or willingness of the Organization of Petroleum Exporting Countries ("OPEC") to set and maintain production levels for oil;
• oil and gas production levels by non-OPEC countries;
• the level of excess production capacity;

• political and economic uncertainty and geopolitical unrest;
• the level of worldwide oil and gas exploration and production activity;
• access to potential resources;
• governmental policies and subsidies;
• the costs of exploring for, producing and delivering oil and gas;
• technological advances affecting energy consumption; and
• weather conditions.

Constraints in the supply of, prices for, and availability of transportation of raw materials can have a material adverse effect on our business and consolidated results of operations.

Raw materials essential to our business, such as explosives, steel, metal powder, and electronics are normally readily available. Shortages of raw materials or long-lead times in receiving such materials as a result of high levels of demand or loss

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of suppliers during market challenges can trigger constraints in the supply chain of those raw materials, particularly where we have a relationship with a single supplier for a particular resource. An increase in military activity in certain parts of the world could impact the availability of explosives as capacity could potentially be diverted to supply military requirements. These delays and constraints could have a material adverse effect on our business and consolidated results of operations. In addition, price increases imposed by our vendors for raw materials used in our business and the inability to pass these increases through to our customers could have a material adverse effect on our business and consolidated results of operations.

Failure to adjust our manufacturing and supply chain to accurately meet customers demand could adversely affect our results of operations.

We make significant decisions, including determining the levels of business that we will seek and accept, production schedules, levels of reliance on contract manufacturing and outsourcing, internal fabrication utilization and other resource requirements, based on our estimates of customer requirements. Factors that can impact our ability to accurately estimate future customer requirements include the short-term nature of many customers' commitments, our customers' ability to reschedule, cancel and modify orders with little or no notice and without significant penalty, the accuracy of our customers' forecasts, and seasonal or cyclical trends in customers' industries.

To ensure availability of our products, particularly for our largest customers, we typically start manufacturing our relevant products based on our customers' forecasts, which are not binding. As a result, we incur inventory and manufacturing costs in advance of anticipated sales that may never materialize or which may be substantially lower than expected. If actual demand for our products is lower than forecast, we may also experience higher inventory carrying and operating costs and product obsolescence. Because certain of our sales, research and development, and internal manufacturing overhead expenses are relatively fixed, a reduction in customer demand may also decrease our gross margin and operating income.

Conversely, customers often require rapid increases in production on short notice. We may be unable to secure sufficient materials or contract manufacturing capacity to meet such increases in demand. This could damage our customer relationships, reduce revenue growth and margins, subject us to additional liabilities, harm our reputation, and prevent us from taking advantage of opportunities.

Failure to manage periods of growth or contraction may seriously harm our business.

Our industry frequently sees periods of expansion and contraction to adjust to customers' needs and market demands. We regularly contend with these issues and must carefully manage our business to meet customer and market requirements. If we fail to manage these growth and contraction decisions effectively, we may find ourselves with either excess or insufficient resources and our business and our profitability could suffer as a result.

Expansions, including the transfer of operations to other facilities or the construction of new manufacturing facilities, such as the planned new manufacturing and assembly facility and the addition of a second automated DynaSelect detonator line in Blum, Texas (together, the "Blum expansion"), include the risk of additional costs and start-up inefficiencies. If we are unable to effectively manage our expansions or related anticipated net sales are not realized, our operating results could be adversely affected. Risks of the Blum expansion project and future expansions include:

- increased costs associated with opening new facilities, including the ability to meet budget constraints on construction projects;
- difficulties in the timing of expansions, including delays in the implementation of construction and manufacturing plans;
-

- the inability to successfully integrate additional facilities or incremental capacity and to realize anticipated efficiencies, economies of scale or other value;
- challenges faced as a result of transitioning programs;
- additional fixed or other costs, or selling, general and administrative ("SG&A") expenses, which may not be fully absorbed by the new business;
- a reduction of our return on invested capital, including as a result of excess inventory or excess capacity at new facilities;
- diversion of management’s attention from other business areas during the planning and implementation of expansions;
- strain placed on our operational, financial and other systems and resources, and
- inability to locate sufficient employees or management talent to support the expansion.

Periods of contraction or reduced net sales, or other factors affecting particular sites, create other challenges. We must determine whether facilities remain viable, whether staffing levels need to be reduced, and how to respond to changing levels

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of customer demand. While maintaining excess capacity or higher levels of employment entails short-term costs, reductions in capacity or employment could impair our ability to respond to new opportunities and programs, market improvements or to maintain customer relationships. Our decisions to reduce costs and capacity can affect our short-term and long-term results and result in restructuring charges.

Demand for our products and services could be reduced by existing and future legislation or regulations.

Environmental advocacy groups and regulatory agencies in the United States and other countries have been focusing considerable attention on the emissions of carbon dioxide, methane and other greenhouse gases and their potential role in climate change. Existing or future legislation and regulations related to greenhouse gas emissions and climate change, as well as government initiatives to conserve energy or promote the use of alternative energy sources, may significantly curtail demand for and production of fossil fuels such as oil and gas in areas of the world where our customers operate, and thus adversely affect future demand for our products. This may, in turn, adversely affect our financial condition, results of operations and cash flows.

Some international, national, state and local governments and agencies have also adopted laws and regulations or are evaluating proposed legislation and regulations that are focused on the extraction of shale gas or oil using hydraulic fracturing. Hydraulic fracturing is a stimulation treatment routinely performed on oil and gas wells in low-permeability reservoirs. Specially engineered fluids are pumped at high pressure and rate into the reservoir interval to be treated, causing cracks in the target formation. Proppant, such as sand of a particular size, is mixed with the treatment fluid to keep the cracks open when the treatment is complete. Future hydraulic fracturing-related legislation or regulations could limit or ban hydraulic fracturing, or lead to operational delays and increased costs, and therefore reduce demand for our products. If such additional international, national, state or local legislation or regulations are enacted, it could adversely affect our financial condition, results of operations and cash flows.

If we are not able to design, develop, and produce commercially competitive products in a timely manner in response to changes in the market, customer requirements, competitive pressures, and technology trends, our business and consolidated results of operations and the value of our intellectual property could be materially and adversely affected.

The market for our products is characterized by continual technological developments to provide better and more reliable performance. If we are not able to design, develop, and produce commercially competitive products in a timely manner in response to changes in the market, customer requirements, competitive pressures, and technology trends, our business and consolidated results of operations and the value of our intellectual property could be materially and adversely affected. Likewise, if our proprietary technologies, equipment, facilities, or work processes become obsolete, we may no longer be competitive, and our business and consolidated results of operations could be materially and adversely affected.

The manufacturing of explosives subjects DynaEnergetics to various environmental, health and safety laws and any accidents or injuries could subject us to significant liabilities.

The use of explosives is inherently dangerous. DynaEnergetics is subject to a number of environmental, health, and safety laws and regulations covering all aspects of the business including general operating licenses, transportation domestically and internationally, storage requirements, waste disposal, manufacturing regulations, employee training and certification requirements, and labor regulations. Violation of these laws and regulations could result in significant penalties or in interruption of our business activities. DynaEnergetics' success depends on continued compliance with applicable laws and regulations. In addition, new environmental, health and safety laws and regulations could be passed that could create costly compliance issues. While DynaEnergetics endeavors to comply with all applicable laws and regulations, compliance with future laws and regulations may not be economically feasible or even possible. Even with compliance with applicable health and safety laws, it is possible that accidents may occur, potentially

resulting in injury to our employees, equipment and facilities. Any accident could result in significant manufacturing delays, disruption of operations or claims for damages resulting from death or injuries, which could result in decreased sales and increased expenses.

We may not be able to continue to compete successfully against other perforating companies.

DynaEnergetics competes principally with perforating companies based in North America, South America, and Russia, which produce and market perforating services and products. DynaEnergetics also competes with oil and gas service companies that are able to satisfy a portion of their perforating needs through in-house production. To remain competitive, DynaEnergetics must continue to provide innovative products and maintain an excellent reputation for safety, quality, on-time delivery, and value. There can be no assurances that we will continue to compete successfully against these companies.

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Risk Factors Related to our Businesses Generally

Our operating results fluctuate from quarter to quarter.

We have experienced, and expect to continue to experience, fluctuations in annual and quarterly operating results caused by various factors at both NobelClad and DynaEnergetics. At NobelClad, quarterly sales and operating results depend on the volume and timing of the orders in our backlog as well as bookings during the quarter. At DynaEnergetics, the level of demand from our customers is impacted by oil and gas prices as well as a variety of other factors and can vary significantly from quarter to quarter. Significant portions of our operating expenses are fixed, and planned expenditures are based primarily on sales forecasts and product development programs. If sales do not meet our expectations in any given period, the adverse impact on operating results may be magnified by our inability to adjust operating expenses sufficiently or quickly enough to compensate for such a shortfall. Results of operations in any period should not be considered indicative of the results for any future period. See “Management’s Discussion and Analysis of Financial Condition and Results of Operations.” Fluctuations in operating results may also result in fluctuations in the price of our common stock.

We are exposed to potentially volatile fluctuations of the U.S. dollar (our reporting currency) against the currencies of many of our operating subsidiaries.

Many of our operating subsidiaries conduct business in Euros or other foreign currencies such as the Russian Ruble. Sales made in currencies other than U.S. dollars accounted for 28%, 28%, and 23% of total sales for the years ended 2017, 2016 and 2015, respectively. Any increase (decrease) in the value of the U.S. dollar against any foreign currency that is the functional currency of any of our operating subsidiaries will cause us to experience foreign currency translation (gains) losses with respect to amounts already invested in such foreign currencies. In addition, our company and our operating subsidiaries are exposed to foreign currency risk to the extent that we or they enter into transactions denominated in currencies other than our or their respective functional currencies. For example, DynaEnergetics KG’s functional currency is Euros, but its sales often occur in U.S. dollars. Changes in exchange rates with respect to these items will result in unrealized (based upon period-end exchange rates) or realized foreign currency transaction gains and losses upon settlement of the transactions. In addition, we are exposed to foreign exchange rate fluctuations related to our operating subsidiaries’ assets and liabilities and to the financial results of foreign subsidiaries and affiliates when their respective financial statements are translated into U.S. dollars for inclusion in our Consolidated Financial Statements. Cumulative translation adjustments are recorded in accumulated other comprehensive income (loss) as a separate component of equity. Our primary exposure to foreign currency risk is the Euro due to the percentage of our U.S. dollar revenue that is derived from countries where the Euro is the functional currency and the Russian Ruble due to our operations in Tyumen, Siberia. During the third quarter of 2017, we began using foreign currency forward contracts, generally with maturities of one month, to offset foreign exchange rate fluctuations on certain foreign currency denominated asset and liability account balances. These hedge transactions relate to our operating entities with significant economic exposure to transactions denominated in currencies other than their functional currency. Our primary economic exposures include the U.S. dollar to the Euro, the U.S. dollar to the Canadian dollar, the Euro to the U.S. Dollar and the Euro to the Russian Ruble. Since the underlying balance sheet account balances being hedged can fluctuate significantly throughout our monthly hedge periods, our hedging program cannot fully protected against foreign currency fluctuations.

The terms of our indebtedness contain a number of restrictive covenants, the breach of any of which could result in acceleration of payment of our credit facilities.

As of December 31, 2017, we had an outstanding balance of approximately $18.3 million on our syndicated credit agreement. This agreement includes various covenants and restrictions and certain of these relate to the incurrence of additional indebtedness and the mortgaging, pledging or disposing of major assets. We are also required to maintain

certain financial ratios on a quarterly basis. A breach of any of these covenants could impair our ability to borrow and could result in acceleration of our obligations to repay our debt, if we are unable to obtain a waiver or amendment from our lenders. As of December 31, 2017, we were in compliance with all financial covenants and other provisions of the credit agreement and our other loan agreements. Any failure to remain in compliance with any material provision or covenant of our credit agreement could result in a default, which would, absent a waiver or amendment, require immediate repayment of outstanding indebtedness under our credit facilities.

We are dependent on a relatively small number of large projects and customers for a significant portion of our net sales.

A significant portion of our net sales is derived from a relatively small number of projects and customers; therefore, the failure to complete existing contracts on a timely basis, to receive payment for such services in a timely manner, or to enter into future contracts at projected volumes and profitability levels could adversely affect our ability to meet cash requirements exclusively through operating activities. We attempt to minimize the risk of losing customers or specific contracts by

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continually improving commercial execution, product quality, delivering product on time and competing aggressively on the basis of price. We expect to continue to depend upon our principal customers for a significant portion of our sales, although our principal customers may not continue to purchase products and services from us at current levels, if at all. The loss of one or more major customers or a change in their buying patterns could have a material adverse effect on our business, financial condition, and results of operations.

We are susceptible to the cyclicality of the steel industry.

Steel plate and steel pipe are key materials used our NobelClad and DynaEnergetics' businesses. The steel industry is very cyclical and is affected significantly by supply and demand factors, general economic conditions and other factors such as worldwide production capacity, fluctuations in steel imports/exports, tariffs and quotas. Additional tariffs, such as those recently announced as planned on steel and aluminum, will increase our raw materials costs and ultimately increase the cost of our products to our customers. For our NobelClad business, this would impact our ability to compete on international projects and will negatively impact U.S. fabricators, which are strong consumers of NobelClad products. The downturn in the U.S. economy in fiscal 2010 had an adverse effect on the U.S. steel industry and on our NobelClad business. The prolonged duration of these conditions and any future downturns in the industry, or the imposition of additional tariffs and quotas, could have a material adverse effect on our business, financial condition or results of operations.

If our customers delay paying or fail to pay a significant amount of our outstanding receivables, it could have a material adverse effect on our liquidity, consolidated results of operations, and consolidated financial condition.

We depend on a limited number of significant customers. For the year ended December 31, 2017, one customer represented approximately 10% of consolidated revenue, and the loss of one or more significant customers could have a material adverse effect on our business and our consolidated results of operations.

In most cases, we bill our customers for our services in arrears and are, therefore, subject to our customers delaying or failing to pay our invoices. In weak economic environments, we may experience increased delays and failures due to, among other reasons, a reduction in our customers' cash flow from operations and their access to the credit markets. If our customers delay paying or fail to pay us a significant amount of our outstanding receivables, it could have a material adverse effect on our liquidity, consolidated results of operations, and consolidated financial condition.

Failure to attract and retain key personnel could adversely affect our current operations.

Our continued success depends to a large extent upon the efforts and abilities of key managerial and technical employees. The loss of services of certain of these key personnel could have a material adverse effect on our business, results of operations, and financial condition. There can be no assurance that we will be able to attract and retain such individuals on acceptable terms, if at all; and the failure to do so could have a material adverse effect on our business, financial condition, and results of operations.

We are subject to extensive government regulation and failure to comply could subject us to future liabilities and could adversely affect our ability to conduct or to expand our business.

We are subject to extensive government regulation in the United States, Germany, France, Canada and Russia, including guidelines and regulations for the purchase, manufacture, handling, transport, storage and use of explosives issued by the U.S. Bureau of Alcohol, Tobacco and Firearms; the Federal Motor Carrier Safety regulations set forth by the U.S. Department of Transportation; the Safety Library Publications of the Institute of Makers of Explosive; and similar guidelines of their European counterparts. In Germany, the transport, storage and use of explosives is governed by a permit issued under the Explosives Act (Sprengstoffgesetz). In France, the manufacture and transportation of

explosives is subcontracted to a third party, who is responsible for compliance with regulations established by various state and local governmental agencies concerning the handling and transportation of explosives. Our French operations could be adversely affected if the third party does not comply with these regulations. We must comply with licensing requirements and regulations for the purchase, transport, storage, manufacture, handling and use of explosives. In addition, while our shooting sites in Tautavel, France are located outdoors, our shooting sites located in Pennsylvania and in Dillenburg, Germany are located in mines, which subject us to certain regulations and oversight of governmental agencies that oversee mines.

We are also subject to extensive environmental, health and safety regulation, as described below under “Liabilities under environmental, health and safety laws could result in restrictions or prohibitions on our facilities, substantial civil or criminal liabilities, as well as the assessment of strict liability and/or joint and several liability” and above under “The use of explosives subjects us to additional regulation, and any accidents or injuries could subject us to significant liabilities.”

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In addition, the shipment of goods, services, and technology across international borders subjects us to extensive trade laws and regulations. Our import activities are governed by the unique customs laws and regulations in each of the countries where we operate. Moreover, many countries, including the United States, control the export and re-export of certain goods, services and technology and impose related export recordkeeping and reporting obligations. Governments may also impose economic sanctions against certain countries, persons, and entities that may restrict or prohibit transactions involving such countries, persons and entities, which may limit or prevent our conduct of business in certain jurisdictions.

The laws and regulations concerning import activity, export recordkeeping and reporting, export control, and economic sanctions are complex and constantly changing. These laws and regulations can cause delays in shipments and unscheduled operational downtime. Moreover, any failure to comply with applicable legal and regulatory trading obligations could result in criminal and civil penalties and sanctions, such as fines, imprisonment, debarment from governmental contracts, seizure of shipments and loss of import and export privileges.

Any failure to comply with current and future regulations in the countries where we operate could subject us to future liabilities. In addition, such regulations could restrict our ability to expand our facilities, construct new facilities, or compete in certain markets or could require us to incur significant expenses in order to maintain compliance. Accordingly, our business, results of operations or financial condition could be adversely affected by our non-compliance with applicable regulations, by any significant limitations on our business as a result of our inability to comply with applicable regulations, or by any requirement that we spend substantial amounts of capital to comply with such regulations.

Our operations are subject to political and economic instability and risk of government actions that could have a material adverse effect on our business, consolidated results of operations, and consolidated financial condition.

We are exposed to risks inherent in doing business in each of the countries in which we operate. Our operations are subject to various risks unique to each country that could have a material adverse effect on our business, consolidated results of operations, and consolidated financial condition. With respect to any particular country, these risks may include:

- political and economic instability, including:
  - civil unrest, acts of terrorism, force majeure, war, other armed conflict, and sanctions;
  - inflation; and
  - currency fluctuations, devaluations, and conversion restrictions; and
- governmental actions that may:
  - result in expropriation and nationalization of our assets in that country;
  - result in confiscatory taxation or other adverse tax policies;
  - limit or disrupt markets or our operations, restrict payments, or limit the movement of funds;
  - result in the deprivation of contract rights; and
  - result in the inability to obtain or retain licenses required for operation.

Liabilities under environmental, health and safety laws could result in restrictions or prohibitions on our facilities, substantial civil or criminal liabilities, as well as the assessment of strict liability and/or joint and several liability.

We are subject to extensive environmental, health and safety regulation in the countries where our manufacturing facilities are located. Any failure to comply with current and future environmental and safety regulations could subject us to significant liabilities. In particular, any failure to control the discharge of hazardous materials and wastes could subject us to significant liabilities, which could adversely affect our business, results of operations or financial

condition.

We and all our activities in the United States are subject to federal, state and local environmental and safety laws and regulations, including but not limited to, noise abatement and air emissions regulations, the Comprehensive Environmental Response, Compensation and Liability Act of 1980, regulations issued and laws enforced by the labor and employment departments of the U.S. and the states in which we conduct business, the U.S. Department of Commerce, and the U.S. Environmental Protection Agency. In Germany, we and all our activities are subject to various safety and environmental regulations of the federal state which are enforced by the local authorities, including the Federal Act on Emission Control (Bundes-Immissionsschutzgesetz). The Federal Act on Emission Control permits are held by companies jointly owned by DynaEnergetics and the other companies that are located at the Troisdorf manufacturing site and are for an indefinite period of time. In France, we and all our activities are subject to state environmental and safety regulations established by various departments of the French Government, including the Ministry of Labor, the Ministry of Ecology and the Ministry of Industry, and to local environmental and safety regulations and administrative procedures established by DRIRE (Direction Régionale de l'Industrie, de la Recherche et de l'Environnement) and the Préfecture des Pyrénées Orientales. In addition, our shooting operations in France may be particularly vulnerable to noise abatement regulations because these operations are primarily co

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nducted outdoors. The Dillenburg, Germany facility is operated based on a specific permit granted by the local mountain authority and must be renewed every three years.

Changes in or compliance with environmental, health and safety laws and regulations could inhibit or interrupt our operations, or require modifications to our facilities. Any actual or alleged violations of environmental, health or safety laws could result in restrictions or prohibitions on our facilities or substantial civil or criminal sanctions. Some laws and regulations impose strict liability and/or joint and several liability. In addition, under certain environmental laws, we could be held responsible for all of the costs relating to any contamination at our facilities and at third party waste disposal sites, even when such contamination was caused by a predecessor and even when the actions resulting in the contamination were lawful at the time. We could also be held liable for any and all consequences arising out of human exposure to hazardous substances or other environmental damage. Accordingly, environmental, health or safety matters may result in significant unanticipated costs or liabilities.

Our failure to comply with Foreign Corrupt Practices Act (“FCPA”) and other laws could have a negative impact on our ongoing operations.

We are subject to complex U.S. and foreign laws and regulations, such as the FCPA and the U.K. Bribery Act, and various other anti-bribery and anticorruption laws. The internal controls, policies and procedures, and employee training and compliance programs we have implemented to deter prohibited practices may not be effective in preventing employees, contractors or agents from violating or circumventing such internal policies and violating applicable laws and regulations. Any determination that we have violated or are responsible for violations of anti-bribery or anti-corruption laws could have a material adverse effect on our financial condition. Violations of international and U.S. laws and regulations may result in fines and penalties, criminal sanctions, administrative remedies, and restrictions on business conduct and could have a material adverse effect on our reputation and our business, operating results and financial condition.

Changes in or interpretation of tax law and currency/repatriation control could impact the determination of our income tax liabilities for a tax year.

We have worldwide operations. Consequently, we are subject to the jurisdiction of a significant number of taxing authorities. The income earned in these various jurisdictions is taxed on differing bases, including net income actually earned, net income deemed earned, and revenue-based tax withholding. The final determination of our income tax liabilities involves the interpretation of local tax laws, tax treaties, and related authorities in each jurisdiction, as well as the use of estimates and assumptions regarding the scope of future operations and results achieved and the timing and nature of income earned and expenditures incurred. Changes in the operating environment, including changes in or interpretation of tax law and currency/repatriation controls, could impact the determination of our income tax liabilities for a tax year.

The enactment of legislation implementing changes in taxation of international business activities, the adoption of other corporate tax reform policies, or changes in tax legislation or policies could materially impact our financial position and results of operations.

Corporate tax reform, base-erosion efforts and tax transparency continue to be high priorities in many tax jurisdictions where we have business operations. As a result, policies regarding corporate income and other taxes in numerous jurisdictions are under heightened scrutiny and tax reform legislation is being proposed or enacted in a number of jurisdictions. For example, the 2017 Tax Reform Act, among other things, reduced the U.S. corporate income tax rate, and imposed base-erosion prevention measures on non-U.S. earnings of U.S. entities as well as a one-time mandatory deemed repatriation tax on accumulated non-U.S. earnings of U.S. entities. The 2017 Tax Reform Act will affect the tax position reflected on our Consolidated Balance Sheets and our obligations for cash taxes of our U.S. entities and

will have a corresponding impact on our consolidated financial results starting in the first quarter of our fiscal year 2018.

In addition, many countries are beginning to implement legislation and other guidance to align their international tax rules with the Organisation for Economic Co-operation's Base Erosion and Profit Shifting recommendations and action plan that aim to standardize and modernize global corporate tax policy, including changes to cross-border tax, transfer-pricing documentation rules, and nexus-based tax incentive practices. As a result of the heightened scrutiny of corporate taxation policies, prior decisions by tax authorities regarding treatments and positions of corporate income taxes could be subject to enforcement activities, and legislative investigation and inquiry, which could also result in changes in tax policies or prior tax rulings. Any such changes in policies or rulings may also result in the taxes we previously paid being subject to change.

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Due to the large scale of our international business activities any substantial changes in international corporate tax policies, enforcement activities or legislative initiatives may materially and adversely affect our business, the amount of taxes we are required to pay and our financial condition and results of operations generally.

Work stoppages and other labor relations matters may make it substantially more difficult or expensive for us to produce our products, which could result in decreased sales or increased costs, either of which would negatively impact our financial condition and results of operations.

We are subject to the risk of work stoppages and other labor relations matters, particularly in Germany and France, where some of our employees are unionized. In the fourth quarter of 2014, we experienced a total of 11 days work stoppage at our facility in Rivesaltes, France related to the consolidation program of NobelClad's European explosion welding operations. We could experience additional strikes or work stoppages in the future as a result of our planned closure of manufacturing operations in Rivesaltes, France during 2018. The employees at our U.S. manufacturing facilities are not unionized. Any prolonged work stoppage or strike at any one of our principal facilities could have a negative impact on our business, financial condition or results of operations.

We are subject to litigation and may be subject to additional litigation in the future.

We are currently, and may in the future become, subject to litigation, arbitration or other legal proceedings with other parties. Managing or defending such legal proceedings may result in substantial legal fees, expenses and costs and diversion of management resources. If decided adversely to DMC, these legal proceedings, or others that could be brought against us in the future, could have a material adverse effect on our financial position or prospects. For a more detailed discussion of pending litigation, see Note 8 to our Consolidated Financial Statements.

In the event of a dispute arising at our foreign operations, we may be subject to the exclusive jurisdiction of foreign courts or arbitral panels, or may not be successful in subjecting foreign persons to the jurisdiction of courts or arbitral panels in the United States. Our inability to enforce our rights and the enforcement of rights on a prejudicial basis by foreign courts or arbitral panels could have an adverse effect on our results of operations and financial position.

Our failure to protect our proprietary information and any successful intellectual property challenges or infringement proceedings against us could materially and adversely affect our competitive position.

We rely on a variety of intellectual property rights that we use in our products and services. We may not be able to successfully preserve these intellectual property rights in the future, and these rights could be invalidated, circumvented, or challenged. In addition, the laws of some foreign countries in which our products and services may be sold do not protect intellectual property rights to the same extent as the laws of the United States. Our failure to protect our proprietary information and any successful intellectual property challenges or infringement proceedings against us could materially and adversely affect our competitive position. Our competitors may be able to develop technology independently that is similar to ours without infringing on our patents or gaining access to our trade secrets, which could adversely affect our financial condition, results of operations and cash flows.

We may be subject to litigation if another party claims that we have infringed upon its intellectual property rights.

The tools, techniques, methodologies, programs and components we use to provide our services may infringe upon the intellectual property rights of others. We have an active freedom to operate review process for our technology, but there is no assurance that future infringement claims will not be asserted. Infringement claims, such as those raised in the ongoing GEODynamics litigation, generally result in significant legal and other costs and may distract management from running our core business even if we are ultimately successful. In the event of any adverse ruling in any intellectual property litigation, we could be required to pay substantial damages, cease the manufacturing, use and

sale of infringing products, discontinue the use of certain processes or obtain a license from the third party claiming infringement with royalty payment obligations by us. We also have certain indemnification obligations to customers with respect to the infringement of third party intellectual property rights by our products, which may increase our costs.

A failure in our information technology systems or those of third parties, including those caused by security breaches, cyber-attacks or data protection failures, could disrupt our business, damage our reputation and causes losses.

We are dependent upon information technology systems in the conduct of our operations. Our information technology systems are subject to disruption, damage or failure from a variety of sources, including, without limitation, computer viruses, security breaches, cyber-attacks, natural disasters and defects in design. Cybersecurity incidents, in particular, are evolving and

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include, but are not limited to, malicious software, attempts to gain unauthorized access to data and other electronic security breaches that could lead to disruptions in systems, unauthorized release of confidential or otherwise protected information and the corruption of data. Various measures have been implemented to manage our risks related to information technology systems and network disruptions. However, given the unpredictability of the timing, nature and scope of information technology disruptions, we could potentially be subject to production downtimes, operational delays, the compromising of confidential or otherwise protected information, destruction or corruption of data, security breaches, other manipulation or improper use of our systems and networks or financial losses from remedial actions, any of which could have a material adverse effect on our cash flows, competitive position, financial condition or results of operations.

We outsource certain technology and business process functions to third parties and may increasingly do so in the future. If we do not effectively develop, implement and monitor our outsourcing strategy, third party providers do not perform as anticipated or we experience technological or other problems with a transition, we may not realize productivity improvements or cost efficiencies and may experience operational difficulties, increased costs and loss of business. Our outsourcing of certain technology and business processes functions to third parties may expose us to enhanced risks related to data security, which could result in monetary and reputational damages. In addition, our ability to receive services from third party providers may be impacted by cultural differences, political instability, unanticipated regulatory requirements or policies. As a result, our ability to conduct our business may be adversely affected.

The regulatory environment surrounding information security and privacy is increasingly demanding. We are subject to numerous U.S. federal and state laws and non-U.S. laws and regulations governing the protection of personal and confidential information of our customers and employees. In particular, the European Union (“E.U.”) has adopted the General Data Protection Regulation, or GDPR, which is scheduled to go into effect in May 2018 and contains numerous requirements that must be complied with when handling the personal data of E.U. based data subjects. We will be subject to the GDPR with respect to our E.U. operations and employees. These laws and regulations are increasing in complexity and number, change frequently and sometimes conflict. In particular, as the E.U. states reframe their national legislation to prepare for and harmonize with the GDPR, we will need to monitor compliance with all relevant E.U. member states' laws and regulations, including where permitted derogations from the GDPR are introduced.

The introduction of the GDPR, and any resultant changes in E.U. member states' national laws and regulations, may increase our compliance obligations and may necessitate the review and implementation of policies and processes relating to our collection and use of data. This increase in compliance obligations could also lead to an increase in compliance costs which may have an adverse impact on our business, financial condition or results of operations. If any person, including any of our employees or those with whom we share such information, negligently disregards or intentionally breaches our established controls with respect to our client or employee data, or otherwise mismanages or misappropriates that data, we could be subject to significant monetary damages, regulatory enforcement actions, fines and/or criminal prosecution in one or more jurisdictions. For example, under the GDPR there are significant new punishments for noncompliance which could result in a penalty of up to the greater of €20 million or 4% of a firm's global annual revenue. In addition, a data breach could result in negative publicity which could damage our reputation and have an adverse effect on our business, financial condition or results of operations.

To the extent that we seek to expand our business through acquisitions, we may experience issues in executing acquisitions or integrating acquired operations.

From time to time, we examine opportunities to make selective acquisitions in order to increase shareholder return by increasing our total available markets, expanding our existing operations and, potentially, generating synergies. The success of any acquisition depends on a number of factors, including, but not limited to:

- identifying suitable candidates for acquisition and negotiating acceptable terms;
- obtaining approval from regulatory authorities and potentially DMC's shareholders;
- maintaining our financial and strategic focus and avoiding distraction of management during the process of integrating the acquired business;
- implementing our standards, controls, procedures and policies at the acquired business and addressing any pre-existing liabilities or claims involving the acquired business; and
- to the extent the acquired operations are in a country in which we have not operated historically, understanding the regulations and challenges of operating in that new jurisdiction.

There can be no assurance that we will be able to conclude any acquisitions successfully or that any acquisition will achieve the anticipated synergies or other positive results. Any material problems that we encounter in connection with such an acquisition could have a material adverse effect on our business, results of operations and financial position.

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If we fail to establish and maintain adequate internal controls over financial reporting, we may not be able to report our financial results in a timely and reliable manner, which could harm our business and impact the value of our securities.

We depend on our ability to produce accurate and timely financial statements in order to run our business. If we fail to do so, our business could be negatively affected and our independent registered public accounting firm may be unable to attest to the fair presentation of our Consolidated Financial Statements in accordance with U.S. generally accepted accounting principles ("GAAP") and the effectiveness of our internal control over financial reporting, as required by Section 404 of the Sarbanes-Oxley Act. Effective internal controls are necessary for us to provide reliable financial reports and to effectively prevent fraud. If we cannot provide reliable financial reports and effectively prevent fraud, our reputation and operating results could be harmed. Even effective internal controls have inherent limitations including the possibility of human error, the circumvention or overriding of controls, or fraud. Therefore, even effective internal controls can provide only reasonable assurance with respect to the preparation and fair presentation of financial statements. In addition, projections of any evaluation of effectiveness of internal control over financial reporting in future periods are subject to the risk that the control may become inadequate because of changes in conditions or a deterioration in the degree of compliance with the policies or procedures.

If we fail to maintain adequate internal controls, including any failure to implement new or improved controls, or if we experience difficulties in their execution, we could fail to meet our reporting obligations, and there could be a material adverse effect on our business and financial results. In the event that our current control practices deteriorate, we may be unable to accurately report our financial results or prevent fraud, and investor confidence and the market price of our stock may be adversely affected.

Risk Factors Related to Our Common Stock

The price of our common stock may be volatile, which may make it difficult for you to resell the common stock when you want or at prices you find attractive.

The market price and volume of our common stock may be subject to significant fluctuations due to general stock market conditions and/or a change in sentiment in the market regarding our operations, business prospects or liquidity. Among the factors that could affect the price of our common stock are:

- changes in the oil and gas, industrial, or infrastructure markets;
- operating and financial performance that vary from the expectations of management, securities analysts and investors;
- developments in our business or in our business sectors generally;
- regulatory changes affecting our industry generally or our business and operations;
- the operating and stock price performance of companies that investors consider to be comparable to us;
- announcements of strategic developments, acquisitions and other material events by us or our competitors;
- our ability to integrate and operate the companies and the businesses that we acquire; and
- changes in global financial markets and global economies and general market conditions, such as interest or foreign exchange rates, stock, commodity, credit or asset valuations or volatility.

The stock markets in general have experienced extreme volatility that has at times been unrelated to the operating performance of particular companies. These broad market fluctuations may adversely affect the trading price of our common stock.

Holders of our common stock may not receive dividends.

Holders of our common stock are entitled to receive only such dividends as our Board of Directors may declare out of funds legally available for such payments. We are incorporated in Delaware and governed by the Delaware General Corporation Law. Delaware law allows a corporation to pay dividends only out of surplus, as determined under Delaware law or, if there is no surplus, out of net profits for the fiscal year in which the dividend was declared and for the preceding fiscal year. Under Delaware law, however, we cannot pay dividends out of net profits if, after we pay the dividend, our capital would be impaired. Our ability to pay dividends will be subject to our future earnings, capital requirements and financial condition, as well as our compliance with covenants and financial ratios related to existing or future indebtedness. Although we have historically declared cash dividends on our common stock, we are not required to do so and our Board of Directors may modify the dividend policy or reduce, defer or eliminate our common stock dividend in the future.

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ITEM 1B. Unresolved Staff Comments

None.

ITEM 2. Properties

Corporate Headquarters

Our corporate headquarters are located in Boulder, Colorado. The term of the lease for the office space is through November 30, 2022.

NobelClad

We own our principal domestic manufacturing site, which is located in Mount Braddock, Pennsylvania. We currently lease our primary domestic shooting site, which is located in Dunbar, Pennsylvania, and we also have license and risk allocation agreements relating to the use of a secondary shooting site, Coolspring, that is located within a few miles of the Mount Braddock, facility. The shooting site in Dunbar and the nearby secondary shooting site support our Mount Braddock facility. The lease for the Dunbar property will expire on December 15, 2020, but we have options to renew the lease which extend through December 15, 2029. The license and risk allocation agreements will expire on December 31, 2018, and we have provided notice of the intent to renew these agreements through December 31, 2028.

NobelClad owns a manufacturing site in Liebenscheid, Germany as well as a mine used as a shooting site in Dillenburg, Germany. We lease buildings and land around the mine to ensure access to the shooting site. The leases associated with the Dillenburg shooting site expire August 31, 2021. NobelClad owns the land and the buildings housing its operations in Rivesaltes, France.

DynaEnergetics

DynaEnergetics leases a manufacturing site and sales office in Troisdorf, Germany. The Troisdorf manufacturing site lease expires December 31, 2020. The sales office lease expires December 31, 2020. In the U.S., DynaEnergetics owns manufacturing and assembly sites in Texas and assembly operations in Pennsylvania and leases storage bunkers and office and warehouse space in various cities throughout Texas, Oklahoma, and Louisiana. DynaEnergetics also leases office and warehouse space and bunkers for storage of its explosives in various cities throughout Alberta, Canada. We also lease office space in Moscow, Russia. DynaEnergetics acquired 100% ownership of the land for its manufacturing site and sales office site in Tyumen, Siberia, which it previously leased.

The tables below summarize our properties by segment, including their location, type, size, whether owned or leased and expiration terms, if applicable.

Corporate Headquarters

Location	Property Type	Property Size	Owned/Leased	Expiration Date of Lease (if applicable)
Boulder, Colorado	Corporate and Sales Office	14,630 sq. ft.	Leased	November 30, 2022

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NobelClad

Location	Property Type	Property Size	Owned/Leased	Expiration Date of Lease (if applicable)
Mt. Braddock, Pennsylvania (a)	Clad plate manufacturing and administration office	Land: 14 acres Buildings: 101,300 sq. ft.	Owned	
Dunbar, Pennsylvania	Clad plate shooting site	Land: 322 acres Buildings: 15,960 sq. ft.	Leased	December 15, 2020, with renewal options through December 15, 2029
Cool Spring, Pennsylvania	Clad plate shooting site	1,200,000 sq. ft.	Leased	December 31, 2018, with renewal options through December 31, 2028
Rivesaltes, France	Clad plate manufacturing, sales and administration office	Land: 6.6 acres Buildings: 49,643 sq. ft.	Owned	
Tautavel, France (b)	Clad shooting site	116 acres	109 acres owned, 7 acres leased	December 31, 2021 with renewal options
Dillenburg, Germany	Clad plate shooting site	11.4 acres	Owned	
Würgendorf, Germany (b)	Manufacturing	31,345 sq. ft. Land: 24.6 acres	Leased Owned	August 31, 2021
		Storehouse 174 and 265: 2,756 sq. ft.	Leased	December 31, 2020 with renewal options through December 31, 2025
		Building: 34,251 sq. ft.	Owned	
Liebenscheid, Germany	Manufacturing	Land: 10.47 acres Buildings: 125,394 sq. ft.	Owned	

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DynaEnergetics

Location	Property Type	Property Size	Owned/Leased	Expiration Date of Lease (if applicable)
Troisdorf, Germany	Manufacturing and administration office	Manufacturing: 263,201 sq. ft. Office: 2,033 sq. ft.	Leased	December 31, 2020, with renewal options for 5 years
Troisdorf, Germany	Office, Sieglarer Strasse	9,203 sq. ft.	Leased	February 28, 2019 with yearly renewal options
Liebenscheid, Germany	Manufacturing and office	91, 493 sq. ft.	Owned	
Edmonton, Alberta (c)	Sales office and warehouse	24,000 sq. ft.	Leased	January 31, 2019
Grande Prairie, Alberta	Sales office and warehouse	3,504 sq. ft.	Leased	December 31, 2019
Grande Prairie, Alberta	Storage magazines	144 sq. ft.	Leased	Month to month agreement
Red Deer, Alberta (d)	Sales office and warehouse	12,500 sq. ft.	Leased	March 30, 2018
Red Deer, Alberta	Storage magazines	1,000 sq. ft.	Leased	Lease is continuous until either party gives 120 days notice
Bonnyville, Alberta (c)	Sales office and warehouse	5,355 sq. ft.	Leased	April 30, 2019
Bonnyville, Alberta	Storage magazines	95 sq. ft.	Leased	Month to month agreement
Andrews, Texas	Office and warehouse	4,000 sq. ft.	Leased	Month to month agreement
Andrews, Texas	Land for magazines	600 sq. ft.	Leased	Month to month agreement
Houston, Texas	Office	4,572 sq. ft.	Leased	April 30, 2023
Blum, Texas	Office, warehouse, and manufacturing	16,800 sq. ft.	Owned	
Blum, Texas	Land for magazines	206.3 acres	Owned	
Victoria, Texas	Office and warehouse	4,000 sq. ft.	Leased	Month to month agreement
Victoria, Texas	Storage magazine	8,000 sq. ft.	Leased	Month to month agreement
Whitney, Texas	Office, warehouse, and manufacturing	36,000 sq. ft.	Owned	

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Location	Property Type	Property Size	Owned/Leased	Expiration Date of Lease (if applicable)
Lafayette, Louisiana	Office and warehouse	6,800 sq. ft.	Leased	Month to month agreement
Beaux Bridge, Louisiana	Storage magazine	600 sq. ft.	Leased	Month to month agreement
Dunbar, Pennsylvania	Storage magazines	400 sq. ft.	Owned	
Mt. Braddock, Pennsylvania	Office and warehouse	661 sq. ft.	Owned	
Oklahoma City, OK	Office and Warehouse	5900 sq ft.	Leased	May 31,2018
Oklahoma City, OK	Storage Magazines	24 sq ft.	Leased	May 31,2018
Russia, Nizhnetavdinskiy District	Land	59.7 acres	Owned	
		1.6 acres	Owned	
Russia, Nizhnetavdinskiy District	Office	9,860 sq. ft.	Owned	
Russia, Nizhnetavdinskiy District	Manufacturing	58,216 sq. ft.	Owned	
Noyabrsk, Russia	Warehouse	3,229 sq. ft.	Leased	December 31, 2018
Urengoy, Russia	Warehouse	900 sq. ft.	Leased	December 31, 2018
Nizhnevartovsk, Russia	Warehouse	900 sq. ft.	Leased	December 31, 2018
Kogalym, Russia	Warehouse	800 sq. ft.	Leased	December 31, 2018
Sheremetyevo, Russia (Mezdunarodnoye Shosse 9)	Warehouse	Any shipped quantity of goods	Leased	Not limited
Aktobe, Kazakhstan	Sales Office	548 sq. ft.	Owned	
Aktobe, Kazakhstan	Land (sales office)	0.09 acres	Owned	

(a) The Mt. Braddock, Pennsylvania location is also used as a manufacturing and distribution center for our DynaEnergetics business segment.

(b) In connection with the purchase of the manufacturing facility in Liebenscheid, Germany, NobelClad ceased use of the manufacturing facility in Würgendorf, Germany in the first quarter of 2015. Though NobelClad ceased use of the leased property in Tautevel, France in the first quarter of 2015, the lease agreement remained in effect in order to have access to a redundant shooting site.

(c) The Edmonton, Alberta sales office and warehouse and a portion of the Bonnyville, Alberta sales office and warehouse have been subleased for the duration of their remaining leases.

(d) The Red Deer, Alberta sales office has been vacant since December 31, 2016.

ITEM 3. Legal Proceedings

Anti-dumping and Countervailing Duties

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In June 2015, U.S. Customs and Border Protection (“U.S. Customs”) sent us a Notice of Action that proposed to classify certain of our imports as subject to anti-dumping duties pursuant to a 2010 anti-dumping duty (“AD”) order on Oil Country Tubular Goods (“OCTG”) from China. A companion countervailing duty (“CVD”) order on the same product is in effect as well. The Notice of Action covered one entry of certain raw material steel mechanical tubing made in China and imported into the U.S. from Canada by our DynaEnergetics segment during 2015 for use in manufacturing perforating guns.

In July 2015, we sent a response to U.S. Customs outlining the reasons our mechanical tubing imports do not fall within the scope of the AD order on OCTG from China and should not be subject to anti-dumping duties. U.S. Customs proposed to take similar action with respect to other entries of this product and requested an approximately $1,100 cash deposit or bond for AD/CVD duties.

In August 2015, we posted the bond of approximately $1,100 to U.S. Customs. Subsequently, U.S. Customs declined to conclude on the Company's assertion that the mechanical tubing the Company has been importing is not within the scope of the AD order on OCTG from China. As a result, on September 25, 2015 the Company filed a request for a scope ruling with the U.S. Department of Commerce ("Commerce Department").

On February 15, 2016, the Company received the Commerce Department’s scope ruling, which determined certain imports, primarily used for gun carrier tubing, are included in the scope of the AD/CVD orders on OCTG from China and thus are subject to AD/CVD duties.

On March 11, 2016, the Company filed an appeal with the U.S. Court of International Trade (“CIT”) related to the Commerce Department’s scope ruling. On February 7, 2017, the CIT remanded the scope ruling to the Commerce Department to reconsider its determination. The Commerce Department filed its remand determination with the CIT on June 7, 2017 continuing to find that the Company's imports at issue are within the scope of the AD/CVD orders on OCTG from China. This determination is subject to the CIT's review in the ongoing appeal, which is continuing.

On December 27, 2016, we received notice from U.S. Customs that it may pursue penalties against us related to the AD/CVD issue and demanding tender of alleged loss of AD/CVD duties in an amount of $3,049, which was covered by our reserve. We filed a response to the notice on February 6, 2017 asserting our position that any decision to pursue penalties would be premature in light of the status of the CIT appeal and that penalties would not be appropriate under the applicable legal standards. On February 16, 2017, we received notice that U.S. Customs was seeking penalties in the amount of $14,783. U.S. Customs also reasserted its demand for tender of alleged loss of AD/CVD duties in the amount of $3,049. We tendered $3,049 in AD amounts (“Tendered Amounts”) on March 6, 2017 into a suspense account pending ultimate resolution of the AD/CVD case. We believe that this penalty assessment is premature and patently unreasonable in the face of the ongoing CIT appeal and that penalties are not appropriate under applicable legal standards. Further, even if penalties are found to be justified, we believe the amount of penalties asserted by U.S. Customs is unreasonable and subject to challenge on various grounds. We submitted a petition for relief and mitigation of penalties on May 17, 2017 asserting these and other points and seeking a stay of the penalty proceedings pending ultimate resolution of the CIT appeal and any further appeals. We are awaiting a response from U.S. Customs and U.S. Customs Headquarters on this petition.

For the year ended December 31, 2017, the Company recorded $108 of interest on its reserve for AD/CVD duties, bringing the total reserved amount related to AD/CVD duties as of December 31, 2017 to $3,609. The Tendered Amounts were applied to reduce the reserve. The Company will continue to incur legal defense costs and could also be subject to additional interest and penalties. Accruals for the potential penalties discussed above are not reflected in our financial statements as of December 31, 2017 as we do not believe they are probable at this time.

Patent and Trademark Infringement

On September 22, 2015, GEODynamics, Inc., a US-based oil and gas perforating equipment manufacturer based in Fort Worth, TX, filed a patent and trademark infringement action against DynaEnergetics US, Inc., (“DynaEnergetics”), a wholly owned subsidiary of DMC, in the United States District Court for the Eastern District of Texas (“District Court”) regarding alleged infringement of US Patent No. 9,080,431 granted on July 14, 2015 (the “431 patent”) and a related US trademark for REACTIVE, alleging that DynaEnergetics’ US sales of DPEX® shaped charges infringe the 431 patent and the trademark. The case went to trial in late March 2017, and on March 30, 2017, the jury found in favor of DynaEnergetics on all counts. A bench trial on related matters, including the trademark infringement action occurred on April 20, 2017, and the Court ordered cancellation of GEODynamics' REACTIVE trademark. In December 2017, the Court ordered GEODynamics to reimburse DynaEnergetics for certain of its attorney's fees incurred in connection with the trademark action.

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On July 1, 2016, GEODynamics filed a second patent infringement action against DynaEnergetics in District Court alleging infringement of US Patent No. 8,544,563 (the “563 patent”), also based on DynaEnergetics’ US sales of DPEX® shaped charges. DynaEnergetics denies validity and infringement of the 563 patent and has vigorously defended itself against this lawsuit. As part of that defense, on September 20, 2016, DynaEnergetics filed an Inter Parties Review (IPR) against the 563 patent at the U.S. Patent Trial and Appeal Board (“PTAB”), requesting invalidation of the 563 patent. On March 17, 2017, DynaEnergetics' IPR request was instituted by the PTAB, and on March 1, 2018, PTAB issued its decision in favor of DynaEnergetics, invalidating all challenged claims of the 563 patent. Trial on the 563 patent remains stayed at this time, and DynaEnergetics plans to file for dismissal of the District Court case at the appropriate time.

On April 28, 2017, GEODynamics filed a third patent infringement action against DynaEnergetics in District Court alleging infringement of U.S. Patent No. 8,220,394 (the “394 patent”), based on DynaEnergetics' sales of its DPEX and HaloFrac® shaped charges. DynaEnergetics denies validity and infringement of the 394 patent and plans to vigorously defend against this lawsuit. On August 28, 2017, DynaEnergetics filed an IPR against the 394 patent at the PTAB, requesting invalidation of the 394 patent. PTAB's decision on whether to institute the IPR is expected in mid-March 2018.

On August 21, 2017, GEODynamics filed a patent infringement action against DynaEnergetics GmbH & Co. KG and DynaEnergetics Beteiligungs GmbH, both wholly owned subsidiaries of DMC (collectively, “DynaEnergetics EU”), in the Regional Court of Düsseldorf, Germany, alleging infringement of the German part DE 60 2004 033 297 of European patent EP 1 671 013 B1 granted on June 29, 2011, a patent related to the 394 patent (the “EP 013 patent”). This action is based on the manufacturing, sale and marketing of DPEX® shaped charges in Germany. DynaEnergetics EU denies validity and infringement of the EP 013 patent and plans to vigorously defend against this lawsuit. DynaEnergetics EU filed its defense at the Regional Court of Düsseldorf and a nullity action against EP 013 at the German Federal Patent Court on February 14, 2018. A trial in the infringement proceedings is not yet scheduled but expected in the fourth quarter of 2018, and a trial in the nullity action is not expected before late 2019.

On September 27, 2017, DynaEnergetics GmbH & Co. KG filed a revocation action in the Patents Court, Shorter Trials Scheme in the UK against GEODynamics, asserting that the EP 013 patent, as maintained in the UK, is invalid. GEODynamics filed its defense and a counterclaim alleging infringement of the EP 013 patent in November 2017 based on sales and marketing of DPEX® shaped charges in the UK. DynaEnergetics denies validity and infringement of the EP 013 patent and plans to vigorously challenge the EP 013 patent and defend against this lawsuit. Trial is currently expected to occur in October 2018.

We do not believe that the 563 patent, the 394 patent, the EP 013 patent or infringement claims based on the patents are valid, and we do not believe it is probable that we will incur a material loss on the 563 matter, the 394 matter or the EP 013 matter. However, if it is determined that the patents are valid and that DynaEnergetics or DynaEnergetics EU, as applicable, has infringed them, it is reasonably possible that our financial statements could be materially affected. We are not able to provide a reasonable estimate of the range of loss, and we have not accrued for any such losses. Such an evaluation includes, among other things, a determination of the total number of infringing sales in the United States or infringing products manufactured in Germany, as applicable, what a reasonable royalty, if any, might be under the circumstances; or, alternatively, the scope of damages and the relevant period for which damages would apply, if any.

ITEM 4. Mine Safety Disclosures

Our Coolspring property is subject to regulation by the Federal Mine Safety and Health Administration ("MSHA") under the Federal Mine Safety and Health Act of 1977 (the "Mine Act"). Pursuant to Section 1503(a) of the Dodd-Frank Wall Street Reform and Consumer Protection Act (The "Dodd-Frank Act"), issuers that are operators, or

that have a subsidiary that is an operator, of a coal or other mine in the United States are required to disclose in their periodic reports filed with the SEC information regarding specified health and safety violations, orders and citations, related assessments and legal actions, and mining-related fatalities. During the year ended December 31, 2017, we had no such specified health and safety violations, orders or citations, related assessments or legal actions, mining-related fatalities, or similar events in relation to our United States operations requiring disclosure pursuant to Section 1503(a) of the Dodd-Frank Act.

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PART II

ITEM 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities

Our common stock is publicly traded on The Nasdaq Global Select Market (“Nasdaq”) under the symbol “BOOM.” The following table sets forth quarterly high and low sales prices for the common stock during our last two fiscal years, as reported by Nasdaq.

2017	High	Low
First Quarter	$17.00	$11.75
Second Quarter	$15.55	$11.60
Third Quarter	$18.45	$12.43
Fourth Quarter	$26.15	$16.30

2016	High	Low
First Quarter	$7.23	$4.84
Second Quarter	$11.62	$5.98
Third Quarter	$12.38	$9.20
Fourth Quarter	$17.19	$9.80

As of March 7, 2018, there were 252 holders of record of our common stock (does not include beneficial holders of shares held in “street name”).

Dividend Policy

We declared and paid quarterly dividends aggregating $0.08 per share in 2017 and $0.08 per share in 2016. We may pay quarterly dividends subject to capital availability and periodic determinations that cash dividends are in the best interests of our stockholders, but we cannot assure you that such payments will continue. Future dividends may be affected by, among other items, our views on potential future capital requirements, future business prospects, debt covenant compliance considerations, changes in income tax laws, and any other factors that our Board of Directors deems relevant. Any determination to pay cash dividends will be at the discretion of the Board of Directors.

Equity Compensation Plan
Refer to “Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters” for information regarding securities authorized for issuance under our equity compensation plans, which is incorporated in this Item by this reference.

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Stock Performance Graph

The following graph compares the performance of our common stock with the Nasdaq Non-Financial Stocks Index and the Nasdaq Composite (U.S.) Index. The comparison of total return (change in year-end stock price plus reinvested dividends) for each of the years assumes that $100 was invested on December 31, 2012, in each of the Company, the Nasdaq Non-Financial Stocks Index and the Nasdaq Composite (U.S.) Index with investment weighted on the basis of market capitalization. The comparisons in the graph below are based upon historical data and are not indicative of, or intended to forecast, future performance of our common stock.

Total Return Analysis	12/31/12	12/31/13	12/30/14	12/31/15	12/31/16	12/31/17
DMC Global Inc.	$100	$156.40	$115.252	$50.2878	$114.029	$180.216
Nasdaq Non-Financial Stocks	$100	$136.92	$163.48	$179.42	$192.48	$255.98
Nasdaq Composite (U.S.)	$100	$133.48	$150.12	$150.84	$170.46	$206.91

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ITEM 6. Selected Financial Data

The following selected financial data should be read in conjunction with the Consolidated Financial Statements, including the related Notes, and "Management's Discussion and Analysis of Financial Condition and Results of Operations." In October 2014, we completed the sale of AMK; years 2014 and 2013 reflect the classification of AMK into discontinued operations.

	(Dollars in Thousands, Except Per Share Data) Year Ended December 31,				
Statement of Operations	2017	2016	2015	2014	2013
Net sales	$192,803	$158,575	$166,918	$202,561	$202,060
Gross profit	59,391	38,680	35,624	61,419	58,134
Costs and expenses	49,784	42,752	43,776	47,973	47,156
Restructuring expenses	4,283	1,202	4,063	6,781	—
Goodwill impairment	17,584	—	11,464	—	—
Income (loss) from operations	(12,260)	(5,274)	(23,679)	6,665	10,978
Other expense, net	(3,024)	(434)	(2,410)	(826)	(1,169)
Income (loss) before income taxes, discontinued operations and non-controlling interest	(15,284)	(5,708)	(26,089)	5,839	9,809
Income tax provision (benefit)	3,569	797	(2,118)	3,913	3,736
Income (loss) from continuing operations	(18,853)	(6,505)	(23,971)	1,926	6,073
Income from discontinued operations	—	—	—	641	478
Net income attributable to non-controlling interest	—	—	—	—	92
Net income (loss) attributable to DMC Global Inc.	$(18,853)	$(6,505)	$(23,971)	$2,567	$6,459
Net income (loss) per share attributable to DMC Global Inc. - Basic:					
Continuing operations	$(1.31)	$(0.46)	$(1.72)	$0.13	$0.44
Discontinued operations	$—	$—	$—	$0.05	$0.03
Net income (loss)	$(1.31)	$(0.46)	$(1.72)	$0.18	$0.47
Net income (loss) per share attributable to DMC Global Inc. - Diluted:					
Continuing operations	$(1.31)	$(0.46)	$(1.72)	$0.13	$0.44
Discontinued operations	$—	$—	$—	$0.05	$0.03
Net income (loss)	$(1.31)	$(0.46)	$(1.72)	$0.18	$0.47
Dividends Declared per Common Share	$0.08	$0.08	$0.14	$0.16	$0.16
Financial Position					
Total assets	$173,083	$162,555	$219,329	$219,329	$240,545
Lines of credit	$17,984	$15,732	$22,782	$22,782	$26,400

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

The following discussion should be read in conjunction with our historical Consolidated Financial Statements and notes, as well as the selected historical consolidated financial data included elsewhere in this annual report.

Unless stated otherwise, all dollar figures in this report are presented in thousands (000s). N/M indicates that the change in dollars or percentage was not meaningful.

Overview

General

DMC operates a diversified family of technical product and process businesses serving the energy, industrial and infrastructure markets. Our businesses operate through a global network of manufacturing, distribution and sales facilities. Our business is organized into two segments: NobelClad and DynaEnergetics.

Our diversified segments each provide a suite of unique technical products to niche sectors of the global energy, industrial and infrastructure markets, and each has established a strong or leading position in the markets in which it participates. With an underlying focus on generating free cash flow, our objective is to sustain and grow the market share of our businesses through increased market penetration, development of new applications, and research and development of new and adjacent products that can be sold across our global network of sales and distribution facilities. We routinely explore acquisitions of related businesses that could strengthen or add to our existing product portfolios, or expand our geographic footprint and market presence. We also seek acquisition opportunities outside our current markets that would complement our existing businesses and enable us to build a stronger and more diverse company.

NobelClad

NobelClad is a global leader in the production of explosion-welded clad metal plates for use in the construction of corrosion resistant industrial processing equipment and specialized transition joints. While a significant portion of the demand for our clad metal products is driven by maintenance and retrofit projects at existing chemical processing, petrochemical processing, oil refining, and aluminum smelting facilities, new plant construction and large plant expansion projects also account for a significant portion of total demand. These industries tend to be cyclical in nature and timing of new order inflow remains difficult to predict. We use backlog as a primary means to measure the immediate outlook for our NobelClad business. We define "backlog" at any given point in time as all firm, unfulfilled purchase orders and commitments at that time. Most firm purchase orders and commitments are realized, and we expect to fill most backlog orders within the following 12 months. NobelClad's backlog increased to $37,529 at December 31, 2017 from $31,634 at December 31, 2016.

DynaEnergetics

DynaEnergetics designs, manufactures and distributes products utilized by the global oil and gas industry principally for the perforation of oil and gas wells. These products are sold to oilfield service companies in the U.S., Europe, Canada, South America, Africa, the Middle East, Russia, and Asia. DynaEnergetics also sells directly to end-users. The market for perforating products, which are used during the well completion process, generally corresponds with oil and gas exploration and production activity. Exploration activity over the last several years has led to increasingly complex well completion operations, which in turn, has increased the demand for high quality and technically advanced perforating products.

Cost of products sold for DynaEnergetics includes the cost of metals, explosives and other raw materials used to manufacture shaped charges, detonating products and perforating guns as well as employee compensation and benefits, depreciation of manufacturing facilities and equipment, manufacturing supplies and other manufacturing overhead expenses.

Factors Affecting Results

The following items impacted the comparability of the company's results for the years ended December 31, 2017 and 2016:

- DynaEnergetics' sales of $121,253 in 2017 increased 80% compared with 2016 driven by a recovery in the North American unconventional well-completions sector and reflected increased well-stage counts; higher completion intensity and longer laterals; and increased market penetration of DynaEnergetics’ perforating products and systems, including the DynaSelect detonator and the DynaStage system.

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- NobelClad’s sales of $71,550 in 2017 decreased 22% compared with 2016 as weak capital spending in NobelClad's industrial infrastructure and energy markets resulted in a decline in core repair and maintenance work and the absence of large projects.
- Consolidated gross profit of 31% in 2017 increased from 25% in 2016. The improvement primarily related to a higher proportion of DynaEnergetics sales relative to NobelClad sales, combined with higher average selling prices as well as improved product mix in DynaEnergetics.
- Restructuring expenses of $4,283 in 2017 were related to the planned closure of NobelClad's manufacturing operations in France and the closure of DynaEnergetics' sales and distribution facility in Kazakhstan. Restructuring expenses of $1,202 in 2016 primarily related to severance for headcount reductions and lease termination costs at DynaEnergetics.
- A goodwill impairment charge of $17,584 related to the NobelClad reporting unit was recorded in the third quarter of 2017 to reflect the decline in activity levels in NobelClad’s primary end markets during the second half of the year.
- Consolidated selling, general, and administrative expenses were $45,724 in 2017 compared with $38,741 in 2016. The increase primarily was due to higher patent litigation expenses at DynaEnergetics and increased salaries and wages from headcount additions and higher variable incentive compensation expense.
- Net debt of $9,001 (comprised of $17,984 indebtedness net of $8,983 in cash) decreased 3% from December 31, 2016. Net debt, a non-GAAP measure, is calculated as amounts borrowed under lines of credit less cash and cash equivalents.

Business Outlook

- To address the accelerating demand for its perforating systems, in December 2017, DynaEnergetics commenced construction of a new 74,000 square foot manufacturing, assembly and administrative space on its manufacturing campus in Blum, Texas. The facility, which is scheduled to open during the third quarter of 2018, will substantially increase DynaEnergetics' component manufacturing and DynaStage assembly capacity. During the first half of 2018, DynaEnergetics plans to add a second automated DynaSelect detonator line at its facility in Troisdorf, Germany. In the second half of 2018, the business plans to add a second automated shaped-charge manufacturing line at Blum, which will more than double its shaped charge production capacity in the U.S.
- In January 2018, DynaEnergetics announced the implementation of a global price increase applicable to all products. The increase varies by product line and generally ranges from 5% to 8%. Well completion activity is accelerating across DynaEnergetics' global markets, and as customers work to keep pace with the recovery, the business' advanced products and systems are enabling improved efficiencies, greater reliability and lower operating costs.
- The recent decline in NobelClad’s core repair and maintenance orders from the downstream energy industry has continued in the first quarter of 2018. Despite that, fabricator customers expect improved demand for long-delayed repair, maintenance and upgrade work. It appears higher energy prices and renewed enthusiasm for domestic infrastructure spending may pull forward a number of these projects, which we believe will lead to a recovery in bookings activity during 2018. In October 2017, NobelClad received a $7.4 million purchase order related to a petrochemical project in Asia, which is reflected in NobelClad's year-end backlog, and is expected to be shipped in the first half of 2018. The order is the largest booked by NobelClad in more than four years.

Use of Non-GAAP Financial Measures

Adjusted EBITDA is a non-GAAP (generally accepted accounting principles) measure that we believe provides an important indicator of our ongoing operating performance and that we use in operational and financial decision-making. We define EBITDA as net income or loss plus or minus net interest, taxes, depreciation and amortization. Adjusted EBITDA excludes from EBITDA stock-based compensation, restructuring and impairment charges and, when appropriate, other items that management does not utilize in assessing DMC’s operating performance (as further described in the tables below). As a result, internal management reports used during monthly

operating reviews feature Adjusted EBITDA and certain management incentive awards are based, in part, on the amount of Adjusted EBITDA achieved during the year.

Net Debt is a non-GAAP measure we use to supplement information in our Consolidated Financial Statements. We define net debt as lines of credit less cash and cash equivalents. In addition to conventional measures prepared in accordance with GAAP, the Company uses this information to evaluate its performance, and we believe that certain investors may do the same.

The presence of non-GAAP financial measures in this report is not intended to suggest that such measures be considered in isolation or as a substitute for, or as superior to, DMC's GAAP information, and investors are cautioned that the non-GAAP

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financial measures are limited in their usefulness. Because not all companies use identical calculations, DMC's presentation of non-GAAP financial measures may not be comparable to other similarly titled measures of other companies.

Forward-Looking Statements

This annual report and the documents incorporated by reference into it contain certain forward-looking statements within the safe harbor provisions of the Private Securities Litigations Reform Act of 1995. Words such as "anticipates," "expects," "intends," "plans," "believes," "seeks," "estimates," "may," "will," "continue," "project," "forecast," and similar ex well as statements in the future tense, identify forward-looking statements. Such statements include projections, guidance and other statements regarding our future expected financial position and operating results, our growth and business strategy, our expectations regarding the oil and gas industry, the timing and costs of our Blum, Texas and other expansion plans, our plans to consolidate NobelClad's European production facilities, including the timing and costs involved in closing manufacturing operations in France, our expectations regarding NobelClad's sales, bookings, and backlog in 2018, impacts of the Tax Cuts and Jobs Act, our financing plans, our future liquidity position and factors impacting such position, and the outcome of the pending GEODynamics and anti-dumping matters.

These forward-looking statements are not guarantees of our future performance and are subject to risks and uncertainties that could cause actual results to differ materially from the results contemplated by the forward-looking statements. These risks and uncertainties include those relating to:

- Changes in global economic conditions;
- The ability to obtain new contracts at attractive prices;
- The size and timing of customer orders and shipments;
- Product pricing and margins;
- Our ability to realize sales from our backlog and our ability to adjust our manufacturing and supply chain;
- Fluctuations in customer demand;
- Our ability to manage periods of growth and contraction effectively;
- General economic conditions, both domestic and foreign, impacting our business and the business of the end-market users we serve;
- Competitive factors;
- The timely completion of contracts;
- The timing and size of expenditures;
- The timely receipt of government approvals and permits;
- The price and availability of metal and other raw material;
- The adequacy of local labor supplies at our facilities;
- Current or future limits on manufacturing capacity at our various operations;
- Our ability to successfully integrate acquired businesses;
- The ability to remain an innovative leader in our fields of business;
- The impacts of pending or future litigation or regulatory matters;
- The application of governmental regulation and oversight of our operations and products and the industries in which our customers operate;
- The availability and cost of funds; and
- Fluctuations in foreign currencies.

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The effects of these factors are difficult to predict. New factors emerge from time to time and we cannot assess the potential impact of any such factor on our business or the extent to which any factor, or combination of factors, may cause results to differ materially from those contained in any forward-looking statement. All forward-looking statements speak only as of the date of this annual report, and we do not undertake any obligation to update any forward-looking statement to reflect events or circumstances after the date of such statement or to reflect the occurrence of unanticipated events. In addition, see “Risk Factors” for a discussion of these and other factors that could materially affect our results of operations and financial condition.

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Consolidated Results of Operations

Year ended December 31, 2017 compared to Year Ended December 31, 2016

	2017	2016	$ change	% change
Net sales	$192,803	$158,575	$34,228	22 %
Gross profit	59,391	38,680	20,711	54 %
Gross profit percentage	30.8 %	24.4 %		
COSTS AND EXPENSES:				
General and administrative expenses	27,135	22,115	5,020	23 %
% of net sales	14.1 %	13.9 %		
Selling and distribution expenses	18,589	16,626	1,963	12 %
% of net sales	9.6 %	10.5 %		
Amortization of purchased intangible assets	4,060	4,011	49	1 %
% of net sales	2.1 %	2.5 %		
Restructuring expenses	4,283	1,202	3,081	256 %
Goodwill impairment charge	17,584	—	17,584	
Operating loss	(12,260)	(5,274)	(6,986)	(132)%
Other income (expense), net	(1,376)	633	(2,009)	(317)%
Interest expense, net	(1,648)	(1,067)	(581)	(54)%
Income tax provision	3,569	797	2,772	348 %
Net loss	(18,853)	(6,505)	(12,348)	(190)%
Adjusted EBITDA	$23,148	$9,021	$14,127	157 %

Net sales increased compared with 2016 due to an 80% increase in DynaEnergetics' net sales driven by a recovery in the North American unconventional well-completions sector and reflected increased well-stage counts; higher completion intensity and longer laterals; and increased market penetration of DynaEnergetics’ perforating products and systems. The increase in DynaEnergetics’ net sales partially was offset by a 22% decline in NobelClad's net sales as weak capital spending in NobelClad's industrial infrastructure and energy markets resulted in a decline in core repair and maintenance work and the absence of large projects.

Gross profit percentage increased compared with 2016 primarily due to higher average selling prices and improved product mix in DynaEnergetics and better project mix in NobelClad.

General and administrative expenses increased compared with 2016 primarily due to higher outside legal expenses related to patent infringement defense costs in DynaEnergetics, higher salaries and wages from headcount additions and increased variable incentive compensation, and higher stock-based compensation expense.

Selling and distribution expenses increased compared with 2016 principally due to higher salaries and benefits and increased outside professional services partially offset by a reduction in bad debt expense.

Restructuring expenses in 2017 related to the announced closures of NobelClad's manufacturing facility in France and DynaEnergetics' sales and distribution operations in Kazakhstan. In 2016, restructuring expenses related to severance for headcount reductions at DynaEnergetics' Troisdorf, Germany and Austin, Texas locations, lease termination costs to exit administrative offices in Austin, Texas, costs related to the relocation of perforating gun manufacturing operations in Germany, and the accelerated vesting of stock awards in connection with the elimination of certain positions.

Goodwill impairment charge was recorded in 2017 to fully impair NobelClad's goodwill balance. See "Critical Accounting Policies and Estimates" for further discussion.

Operating loss increased compared with 2016 due to the goodwill impairment charge and restructuring expenses combined with higher corporate unallocated and stock-based compensation expenses. The one-time impairment and restructuring charges and increased operating expenses partially were offset by increased sales volume, higher average selling

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prices, and favorable product mix in DynaEnergetics. Corporate unallocated and stock-based compensation expenses are not allocated to our business segments.

Other income (expense), net in 2017 primarily was made up of realized and unrealized foreign currency losses. In 2016, other income (expense), net principally consisted of realized and unrealized foreign currency gains. Our subsidiaries frequently enter into inter-company and third party transactions that are denominated in currencies other than their functional currency. Changes in exchange rates with respect to these transactions will result in unrealized gains or losses if unsettled at the end of the reporting period or realized gains or losses at settlement of the transaction. During the third quarter of 2017, we began using foreign currency forward contracts, generally with maturities of one month, to offset foreign exchange rate fluctuations on certain foreign currency denominated asset and liability positions. None of these contracts are designated as accounting hedges, and all changes in the fair value of the forward contracts are recognized immediately in "Other income (expense), net" within our Consolidated Statements of Operations.

Interest income (expense), net increased compared with last year primarily due to expensing $261 of deferred debt issuance costs in conjunction with amending our credit facility in March 2017 combined with higher interest rates on a higher average outstanding line of credit balance.

Income tax provision of $3,569 for 2017 compared with an income tax provision of $797 for 2016. The current-year income tax provision included $946 of which was a transition tax related to the recently enacted Tax Cuts and Jobs Act ("TCJA"). The transition tax is a tax on previously untaxed accumulated and current earnings and profits (“E&P”) of certain of our foreign subsidiaries. To determine the amount of the transition tax, we must determine, among other things, the amount of post-1986 E&P of the relevant subsidiaries, as well as the amount of non-U.S. income taxes paid on such earnings. We made a reasonable estimate of the transition tax and recorded a provisional transition tax obligation of $946, of which $871 is recorded in other long-term liabilities in our Consolidated Balance Sheets. However, we continue to gather additional information to compute more precisely the post-1986 E&P and related non-U.S. income taxes paid. The TCJA’s transition tax is payable over eight years beginning in 2018. Upon completion of the analysis of post-1986 E&P and related non-U.S. income taxes paid, revisions to our transition tax obligation, if necessary, will be recorded in the 2018 tax provision. Additionally, we currently are unable to recognize tax benefits associated with losses incurred in certain jurisdictions due to valuation allowances recorded against deferred tax assets in those jurisdictions.

Net loss in 2017 primarily was a result of the non-cash goodwill impairment charge and restructuring expenses and the other factors discussed above. Net loss in 2017 was $18,853, or $1.31 per diluted share, compared with a net loss of $6,505, or $0.46 per diluted share in 2016.

Adjusted EBITDA increased compared with 2016 primarily due to the factors discussed above. See "Overview" above for the explanation of the use of Adjusted EBITDA. The following is a reconciliation of the most directly comparable GAAP measure to Adjusted EBITDA.

	2017	2016
Net loss	$(18,853)	$(6,505)
Interest expense	1,651	1,070
Interest income	(3)	(3)
Provision for income taxes	3,569	797
Depreciation	6,506	6,756
Amortization of purchased intangible assets	4,060	4,011
EBITDA	(3,070)	6,126
Restructuring expenses	4,283	1,202

Goodwill impairment charge	17,584	—
Stock-based compensation	2,975	2,326
Other (income) expense, net	1,376	(633)
Adjusted EBITDA	$23,148	$9,021

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Year ended December 31, 2016 compared to Year Ended December 31, 2015

	2016	2015	$ change	% change
Net sales	$158,575	$166,918	$(8,343)	(5)%
Gross profit	38,680	35,624	3,056	9 %
Gross profit percentage	24.4 %	21.3 %		
COSTS AND EXPENSES:				
General and administrative expenses	22,115	20,998	1,117	5 %
% of net sales	13.9 %	12.6 %		
Selling and distribution expenses	16,626	18,745	(2,119)	(11)%
% of net sales	10.5 %	11.2 %		
Amortization of purchased intangible assets	4,011	4,033	(22)	(1)%
% of net sales	2.5 %	2.4 %		
Restructuring expenses	1,202	4,063	(2,861)	(70)%
Goodwill impairment charge	—	11,464	(11,464)	(100)%
Operating income (loss)	(5,274)	(23,679)	18,405	78 %
Other income (expense), net	633	(669)	1,302	195 %
Interest income (expense), net	(1,067)	(1,741)	674	39 %
Income tax provision	797	(2,118)	2,915	138 %
Net income (loss)	(6,505)	(23,971)	17,466	73 %
Adjusted EBITDA	$9,021	$13,080	$(4,059)	(31)%

Net sales decreased compared with 2015 due to a 13% decrease in DynaEnergetics, which partially was offset by a 1% increase in NobelClad. The decline in DynaEnergetics was due to declining activity levels in the oil and gas well-completions sector and lower average selling prices. The increase in NobelClad primarily related to a large project for the semiconductor capital equipment industry that shipped in the second quarter of 2016.

Gross profit increased compared with 2015 primarily due to the impact of a $6,205 accrual recorded in 2015 for anti-dumping and countervailing duties resulting from an unfavorable scope ruling from the Department of Commerce on prior imports of metals primarily used by DynaEnergetics for gun carrier tubing. Gross profit and gross profit percentage in 2016 were adversely affected by lower average selling prices in DynaEnergetics, a lower proportion of sales in DynaEnergetics relative to NobelClad, and the impact of higher research and development expenses in DynaEnergetics.

General and administrative expenses increased compared with 2015 primarily due to higher outside legal expenses in DynaEnergetics due to patent infringement and anti-dumping litigation.

Selling and distribution expenses decreased compared with 2015 principally due to lower salaries and benefits, a reduction in bad debt expense, and lower outside sales agent commissions in DynaEnergetics driven by sales volume in territories in which we do not have an internal sales team.

Restructuring expenses in 2016 related to severance for headcount reductions at DynaEnergetics' locations in Troisdorf, Germany and Austin, Texas, lease termination costs to exit administrative offices in Austin, Texas, costs related to relocation of perforating gun manufacturing operations in Germany, and the accelerated vesting of stock awards in connection with the elimination of certain positions. In 2015, restructuring expenses at NobelClad related to shifting of the majority of clad metal plate production from facilities in both Rivesaltes, France and Würgendorf, Germany to the new manufacturing facility in Liebenscheid, Germany. DynaEnergetics restructuring expenses related to the consolidation of perforating gun manufacturing centers, the closure of distribution centers, and the reduction of

the administrative workforce at the corporate offices in Troisdorf, Germany. Corporate restructuring expenses relate to the elimination of certain positions in our corporate office and the severance and expense related to the acceleration of unvested stock awards.

Goodwill impairment charge in 2015 was to fully write off goodwill related to the DynaEnergetics segment. See "Critical Accounting Policies and Estimates" for further discussion.

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Operating loss decreased compared with 2015 due to the goodwill impairment at DynaEnergetics combined with the accrual for anti-dumping and countervailing duties in 2015.

Other income (expense), net in 2016 principally consisted of realized and unrealized foreign currency gains. In 2015, other income (expense), net principally consisted of realized and unrealized foreign currency losses. Our subsidiaries frequently enter into inter-company and third party transactions that are denominated in currencies other than their functional currency. Changes in exchange rates with respect to these transactions will result in unrealized gains or losses if unsettled at the end of the reporting period or realized gains or losses at settlement of the transaction.

Interest income (expense), net decreased compared with 2015 primarily due to writing off $508 of deferred debt issuance costs in December 2015 after entering into a credit facility amendment. Interest expense on our lines of credit was lower in 2016 from lower interest on a smaller average outstanding balance, partially offset by higher interest on the accrued anti-dumping and countervailing duties in DynaEnergetics.

Income tax provision of $797 for 2016 compared to an income tax benefit of $2,118 for 2015. We were unable to recognize tax benefits associated with losses incurred in certain jurisdictions due to valuation allowances recorded against deferred tax assets in those jurisdictions.

Net loss in 2016 was $6,505, or $0.46 per diluted share, compared with a net loss of $23,971, or $1.72 per diluted share, in 2015.

Adjusted EBITDA decreased compared with 2015 primarily due to the factors discussed above. See "Overview" above for the explanation of the use of Adjusted EBITDA. The following is a reconciliation of the most directly comparable GAAP measure to Adjusted EBITDA.

	2016	2015
Net income	$(6,505)	$(23,971)
Interest expense	1,070	1,745
Interest income	(3)	(4)
Provision (benefit) for income taxes	797	(2,118)
Depreciation	6,756	6,244
Amortization of purchased intangible assets	4,011	4,033
EBITDA	6,126	(14,071)
Restructuring charges	1,202	4,063
Goodwill impairment charge	—	11,464
Accrued anti-dumping duties	—	6,205
DynaEnergetics inventory reserves	—	1,924
Stock-based compensation	2,326	2,826
Other (income) expense, net	(633)	669
Adjusted EBITDA	$9,021	$13,080

Business Segment Financial Information

We primarily evaluate performance and allocate resources based on segment revenues, operating income and Adjusted EBITDA as well as projected future performance. Segment operating income (loss) is defined as revenues less expenses identifiable to the segment. DMC operating income (loss) and Adjusted EBITDA include unallocated corporate expenses and stock-based compensation expense, which are not allocated to our business segments.

Segment operating income will reconcile to consolidated income (loss) before income taxes by deducting unallocated corporate expenses, including stock-based compensation, net other expense, net interest expense, and income tax provision (benefit).

For the years ended December 31, 2017, 2016 and 2015, the net sales, segment operating income or loss, and Adjusted EBITDA for each segment was as follows:

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	December 31, 2017		
	NobelClad	DynaEnergetics	DMC Global Inc.
Net Sales	$71,550	$ 121,253	$192,803
% of Consolidated	37 %	63 %	
Operating Income (Loss)	(17,360)	15,470	(12,260)
Adjusted EBITDA	7,736	22,807	23,148

	December 31, 2016		
	NobelClad	DynaEnergetics	DMC Global Inc.
Net Sales	$91,285	$ 67,290	$158,575
% of Consolidated	58 %	42 %	
Operating Income (Loss)	8,878	(5,380)	(5,274)
Adjusted EBITDA	12,877	2,516	9,021

	December 31, 2015		
	NobelClad	DynaEnergetics	DMC Global Inc.
Net Sales	$89,980	$ 76,938	$166,918
% of Consolidated	54 %	46 %	
Operating Income (Loss)	5,819	(19,245)	(23,679)
Adjusted EBITDA	10,727	8,127	13,080

NobelClad

Year ended December 31, 2017 compared to Year Ended December 31, 2016

	2017	2016	$ change	% change
Net sales	$71,550	$91,285	$(19,735)	-22 %
Gross profit	15,644	19,103	(3,459)	-18 %
Gross profit percentage	21.9 %	20.9 %		
COSTS AND EXPENSES:				
General and administrative expenses	4,031	4,024	7	— %
Selling and distribution expenses	7,178	5,823	1,355	23 %
Amortization of purchased intangible assets	386	378	8	2 %
Restructuring expenses	3,825	—	3,825	N/M
Goodwill impairment charge	17,584	—	17,584	N/M
Operating income (loss)	(17,360)	8,878	(26,238)	-296 %
Adjusted EBITDA	$7,736	$12,877	$(5,141)	-40 %

Net sales decreased compared with 2016 due to a decline in core repair and maintenance orders from the downstream energy industry and absence of large-project bookings in 2017. Additionally, during the second quarter of 2016, NobelClad shipped a large project related to specialized explosion clad plates used in the fabrication of equipment for a semiconductor material production facility in East Asia.

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Gross profit percentage increased compared with 2016 primarily due to better margins on the mix of projects in the current year.

Selling and distribution expenses increased compared with 2016 primarily from higher salaries and benefits due to increased investment in business growth resources and higher outside services expenses.

Restructuring expense related to the announced closure of NobelClad's manufacturing facility in France.

Goodwill impairment charge related to fully impairing NobelClad's goodwill balance.

Operating loss was primarily due to the goodwill impairment charge and the restructuring expenses combined with lower project volume and higher selling and distribution expenses.

Adjusted EBITDA declined due to the factors discussed above. See "Overview" above for the explanation of the use of Adjusted EBITDA. The following is a reconciliation of the most directly comparable GAAP measure to Adjusted EBITDA.

	2017	2016
Operating (loss) income	$(17,360)	$8,878
Adjustments:		
Restructuring expenses	3,825	—
Goodwill impairment charge	17,584	—
Depreciation	3,301	3,621
Amortization of purchased intangibles	386	378
Adjusted EBITDA	$7,736	$12,877

Year ended December 31, 2016 compared to Year Ended December 31, 2015

	2016	2015	$ change	% change
Net sales	$91,285	$89,980	$1,305	1 %
Gross profit	19,103	17,206	1,897	11 %
Gross profit percentage	20.9 %	19.1 %		
COSTS AND EXPENSES:				
General and administrative expenses	4,024	4,539	(515)	-11 %
Selling and distribution expenses	5,823	5,719	104	2 %
Amortization of purchased intangible assets	378	379	(1)	— %
Restructuring expenses	—	750	(750)	-100 %
Operating income	8,878	5,819	3,059	53 %
Adjusted EBITDA	$12,877	$10,727	$2,150	20 %

Net sales increased compared with 2015 primarily due to timing differences with respect to when orders entered our backlog and the subsequent shipment of these orders. During the second quarter of 2016, NobelClad shipped a large project related to specialized explosion clad plates to be used in the fabrication of equipment for a semiconductor material production facility in East Asia.

Gross profit percentage increased compared with 2015 primarily due to improved margins on NobelClad's mix of projects during 2016. Gross profit also benefited from lower manufacturing overhead expenses from the consolidation of European manufacturing facilities.

General and administrative expenses declined compared with 2015 primarily due to lower salaries and wages and outside service costs.

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Selling and distribution expenses increased compared with 2015 principally due to higher salaries and wages partially offset by a reduction of bad debt expense.

Restructuring expenses in 2015 related to shifting the majority of clad metal plate production from facilities in both Rivesaltes, France and Würgendorf, Germany to the new manufacturing facility in Liebenscheid, Germany.

Operating income increased compared with 2015 primarily due to higher gross profit from favorable project mix, lower general and administrative expenses and no restructuring charges in 2016.

Adjusted EBITDA increased due to the factors discussed above. See "Overview" above for the explanation of the use of Adjusted EBITDA. The following is a reconciliation of the most directly comparable GAAP measure to Adjusted EBITDA.

	2016	2015
Operating income	$8,878	$5,819
Adjustments:		
Restructuring expenses	—	750
Depreciation	3,621	3,779
Amortization of purchased intangibles	378	379
Adjusted EBITDA	$12,877	$10,727

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DynaEnergetics

Year ended December 31, 2017 compared to Year Ended December 31, 2016

	2017	2016	$ change	% change
Net sales	$121,253	$67,290	$53,963	80 %
Gross profit	44,029	19,811	24,218	122 %
Gross profit percentage	36.3 %	29.4 %		
COSTS AND EXPENSES:				
General and administrative expenses	13,373	9,964	3,409	34 %
Selling and distribution expenses	11,054	10,467	587	6 %
Amortization of purchased intangible assets	3,674	3,633	41	1 %
Restructuring expenses	458	1,128	(670)	(59)%
Operating income (loss)	15,470	(5,381)	20,851	387 %
Adjusted EBITDA	$22,807	$2,515	$20,292	807 %

Net sales increased compared with 2016 primarily due to a recovery in North America’s onshore unconventional drilling and completion market and increased market penetration of DynaEnergetics' initiating systems and DynaStage perforating system.

Gross profit percentage increased compared with 2016 primarily due to higher average selling prices, improved product mix and the favorable impact of higher volume on fixed overhead expenses.

General and administrative expenses increased compared with 2016 primarily due to higher outside legal expenses related to patent infringement defense costs and higher salaries and wages from headcount additions and variable incentive compensation expense.

Selling and distribution expenses increased compared with 2016 primarily due to higher salaries and wages and higher outside service costs, partially offset by lower bad debt expense.

Restructuring expense in 2017 related to the closure of operations in Kazakhstan. Restructuring activity in 2016 related to severance for headcount reductions in Troisdorf, Germany and Austin, Texas and the accelerated vesting of stock awards in connection with the elimination of certain positions.

Operating income was $15,470 in 2017 compared to an operating loss of $5,380 in 2016 due to higher unit volume, favorable product mix and higher average selling prices, partially offset by increased general and administrative expenses.

Adjusted EBITDA increased compared with 2016 primarily due to the factors discussed above. See "Overview" above for the explanation of the use of Adjusted EBITDA. The following is a reconciliation of the most directly comparable GAAP measure to Adjusted EBITDA.

	2017	2016
Operating income (loss)	$15,470	$(5,381)
Adjustments:		
Restructuring expenses	458	1,128
Depreciation	3,205	3,135
Amortization of purchased intangibles	3,674	3,633

Adjusted EBITDA	$22,807	$2,515

Year ended December 31, 2016 compared to Year Ended December 31, 2015

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	2016	2015	$ change	% change
Net sales	$67,290	$76,938	$(9,648)	(13)%
Gross profit	19,811	18,662	1,149	6 %
Gross profit percentage	29.4 %	24.3 %		
COSTS AND EXPENSES:				
General and administrative expenses	9,964	8,423	1,541	18 %
Selling and distribution expenses	10,467	12,706	(2,239)	(18)%
Amortization of purchased intangible assets	3,633	3,654	(21)	(1)%
Restructuring expenses	1,128	1,660	(532)	(32)%
Goodwill impairment charge	—	11,464	(11,464)	(100)%
Operating loss	(5,381)	(19,245)	13,864	72 %
Adjusted EBITDA	$2,515	$8,127	$(5,612)	(69)%

Net sales decreased compared with 2015 due to lower volume and average selling prices resulting from the lower demand for well completions in the oil and gas sector.

Gross profit percentage increased compared with 2015 primarily due to the impact of a $6,205 accrual recorded in 2015 for anti-dumping and countervailing duties and favorable product mix in 2016 partially offset by lower average selling prices and higher research and development expenses.

General and administrative expenses increased compared with 2015 due to ongoing patent infringement and anti-dumping litigation costs and higher incentive compensation costs.

Selling and distribution expenses decreased compared with 2015 principally due to lower outside sales agents commission expense driven by sales volume in territories in which we do not have an internal sales force, lower bad debt expense, and lower salaries and wages including the impact of closing distribution centers in 2015.

Restructuring expense in 2016 related to severance for headcount reductions in Troisdorf, Germany and Austin, Texas and lease termination costs in Austin. Restructuring expense in 2015 related to the closure of a number of distribution centers in North America and Colombia and the closure of a perforating gun manufacturing facility and distribution center in Edmonton, Alberta.

Goodwill impairment charge in 2015 related to fully impairing DynaEnergetics' goodwill balance.

Operating loss declined compared to 2015 primarily due to the non-cash goodwill impairment charge and the accrual for anti-dumping and countervailing duties.

Adjusted EBITDA declined due to the factors discussed above. See "Overview" above for the explanation of the use of Adjusted EBITDA. The following is a reconciliation of the most directly comparable GAAP measure to Adjusted EBITDA.

	2016	2015
Operating loss	$(5,381)	$(19,245)
Adjustments:		
Restructuring expenses	1,128	1,660
Goodwill impairment charge	—	11,464
Accrued anti-dumping duties	—	6,205
DynaEnergetics inventory reserves	—	1,924
Depreciation	3,135	2,465

Amortization of purchased intangibles	3,633	3,654
Adjusted EBITDA	$2,515	$8,127

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Liquidity and Capital Resources

We have historically financed our operations from a combination of internally generated cash flow, revolving credit borrowings, and various long-term debt arrangements. We believe that cash flow from operations and funds available under our current credit facilities and any future replacement thereof will be sufficient to fund the working capital, debt service, dividends, announced expansion plans for DynaEnergetics as well as other capital expenditure requirements of our current business operations for the foreseeable future. Nevertheless, our ability to generate sufficient cash flows from operations will depend upon our success in executing our strategies. If we are unable to (i) realize sales from our backlog; (ii) secure new customer orders; (iii) continue selling products at attractive margins; and (iv) continue to implement cost-effective internal processes, our ability to meet cash requirements through operating activities could be impacted. Also, continued heightened litigation costs or unfavorable court decisions in ongoing patent infringement litigation or anti-dumping and countervailing duties ("AD/CVD") matters could negatively impact our ability to meet future cash requirements. Furthermore, any restriction on the availability of borrowings under our credit facilities could negatively affect our ability to meet future cash requirements. In March 2017, we filed a shelf registration statement on Form S-3 with the Securities and Exchange Commission, which has been declared effective, and on which we registered for sale up to $150 million of certain of our securities from time to time and on terms that we may determine in the future. Our ability to access this capital may be limited by market conditions at the time of any future potential offering. There can be no assurance that any such capital will be available on acceptable terms or at all.

We declared and paid quarterly dividends aggregating $0.08 per share in 2017 and $0.08 per share in 2016. We may pay quarterly dividends subject to capital availability and periodic determinations that cash dividends are in the best interests of our stockholders. Future dividends may be affected by, among other items, our views on potential future capital requirements, future business prospects, debt covenant compliance considerations, changes in income tax laws, and any other factors that our Board of Directors deems relevant. Any determination to pay cash dividends will be at the discretion of the Board of Directors.

Debt facilities

On March 8, 2018, we entered into a five-year $75,000 syndicated credit agreement (“credit facility”) which replaced in its entirety our prior syndicated credit facility entered into on February 23, 2015. The new credit facility allows for revolving loans of up to $50,000 with a $20,000 US dollar equivalent sublimit for alternative currency loans. In addition, the new agreement provides for a $25,000 Capital Expenditure Facility (“Capex Facility)” which is to be used to finance our DynaEnergetics manufacturing expansion project in Blum, Texas. The Capex facility allows for advances to fund capital expenditures of the Blum expansion project during year one of the credit facility. At the end of year one, the Capex Facility will convert to a term loan which will be amortizable at 12.5% of principal per year with a balloon payment for the outstanding balance upon the credit facility maturity date in year five. The new facility has a $100,000 accordion feature to increase the commitments under the revolving loan class and/or by adding a term loan subject to approval by applicable lenders. We entered into the credit facility with a syndicate of three banks, with KeyBank, N.A. acting as administrative agent. The syndicated credit facility is secured by the assets of DMC including accounts receivable, inventory, and fixed assets, as well as guarantees and share pledges by DMC and its subsidiaries.

Borrowings under the $50,000 revolving loan and $25,000 Capex term loan can be in the form of one, two, three, or six month London Interbank Offered Rate (“LIBOR”) loans. Additionally, US dollar borrowings on the revolving loan can be in the form of Base Rate loans (Base Rate borrowings are based on the greater of the administrative agent’s Prime rates, an adjusted Federal Funds rates or an adjusted LIBOR rate). LIBOR loans bear interest at the applicable LIBOR rate plus an applicable margin (varying from 1.50% to 3.00%). Base Rate loans bear interest at the defined Base rate plus an applicable margin (varying from 0.50% to 2.00%).

Borrowings under the $20,000 Alternate Currency sublimit can be in Euros, Canadian dollars, Pounds sterling, and in any other currency acceptable to the administrative agent. Alternative currency borrowings denominated in Euros, Pounds sterling, and any other currency that is dealt with on the London Interbank Deposit Market shall be comprised of LIBOR loans and bear interest at the LIBOR rate plus an applicable margin (varying from 1.50% to 3.00%).

The credit facility includes various covenants and restrictions, certain of which relate to the payment of dividends or other distributions to stockholders; redemption of capital stock; incurrence of additional indebtedness; mortgaging, pledging or disposition of major assets; and maintenance of specified ratios.

As of December 31, 2017, U.S. dollar revolving loans of $18,250 were outstanding under our 2015 syndicated credit facility and our available borrowing capacity was approximately $16,750.

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The leverage ratio is defined in the 2015 syndicated credit facility, as amended, for any trailing four quarter period, as the ratio of Consolidated Funded Indebtedness (as defined in the agreement) on the last day of such period to Consolidated Pro Forma EBITDA for such period. The maximum leverage ratio permitted by our 2015 syndicated credit facility, as amended, is 3.0 to 1.0. The actual leverage ratio as of December 31, 2017, calculated in accordance with the 2015 syndicated credit facility, as amended, was 0.82 to 1.0.

The debt service coverage ratio is defined in the 2015 syndicated credit facility, as amended, for any trailing four quarter period, as the ratio of (x) Consolidated Pro Forma EBITDA for such period minus the sum of cash dividends, certain cash income taxes, and capital expenditures for such period to (y) the sum of cash interest expense for such period and scheduled principal payments of Consolidated Funded Indebtedness actually made during such period. The 2015 syndicated credit facility, as amended, required a minimum debt service coverage ratio of 1.35 to 1.0. The actual debt service coverage ratio for the trailing twelve months ended December 31, 2017, calculated in accordance with the 2015 syndicated credit facility, as amended, was 12.74 to 1.0.

Our 2015 syndicated credit facility also includes various other covenants and restrictions, certain of which relate to the payment of dividends or other distributions to stockholders, redemption of capital stock, incurrence of additional indebtedness, mortgaging, and pledging or disposition of major assets. As of December 31, 2017, we were in compliance with all financial covenants and other provisions of our credit facilities.

We also maintain a line of credit with a German bank for certain European operations. This line of credit provides a borrowing capacity of 4,000 Euros.

Other contractual obligations and commitments

The table below presents principal cash flows by expected maturity dates for our debt obligations and other contractual obligations and commitments as of December 31, 2017:

	Payment Due by Period As of December 31, 2017				
Other Contractual Obligations	Less than 1 Year	1-3 Years	3-5 Years	More than 5 Years	Total
Multicurrency revolver (1)	$—	$ 18,250	$ —	$ —	$18,250
Operating lease obligations (2)	1,365	1,625	832	100	3,922
License agreements obligations (3)	398	398	—	—	796
Purchase obligations (4)	29,099	—	—	—	29,099
Total	$30,862	$ 20,273	$ 832	$ 100	$52,067

(1) Represents outstanding borrowings under our U.S. dollar revolving line of credit. For more information about our debt obligations, see Note 3 "Debt" to our Consolidated Financial Statements.

(2) The operating lease obligations presented reflect future minimum lease payments due under non-cancelable portions of our leases as of December 31, 2017. Our operating lease obligations are described in Note 8 "Commitments and Contingencies" of the Notes to Consolidated Financial Statements.

(3) The license agreements obligations presented reflect future minimum payments due under non-cancelable portions of our agreements as of December 31, 2017. Our license agreements obligations are described in Note 8 "Commitments and Contingencies" of the Notes to Consolidated Financial Statements.

(4) Amounts represent commitments to purchase goods or services to be utilized in the normal course of business. These amounts are not reflected in the accompanying Consolidated Balance Sheets.

Cash flows from operating activities

Net cash provided by operating activities was $6,747 in 2017 compared with $18,198 for 2016. The decline primarily was due to increased net working capital requirements from higher sales and tendering $3,049 in AD/CVD amounts to U.S. Customs in March 2017 pending ultimate resolution of the AD/CVD case.

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Net cash provided by operating activities was $18,198 in 2016 compared to $1,618 in 2015. The year-over-year increase of $16,580 was driven by an improvement in net working capital. We experienced favorable net working capital changes of $10,081 in 2016 compared to unfavorable changes in net working capital of $3,068 in 2015. Favorable changes in our 2016 net working capital included decreases of $6,829, $2,679 and $1,002 in inventory, accounts receivable and prepaid expenses, respectively, and decreases of $510 and $223 in accrued expenses and other liabilities and in customer advances. The favorable working capital changes partially were offset by a decrease in accounts payable of $1,338.

Cash flows from investing activities

Net cash flows used in investing activities in 2017 totaled $6,184 and primarily consisted of acquisition of property, plant and equipment of $4,025 for DynaEnergetics and $1,584 for NobelClad.

Net cash flows used in investing activities in 2016 totaled $5,702 and primarily consisted of acquisition of property, plant and equipment of $4,448 for DynaEnergetics and $1,217 for NobelClad.

Net cash flows used in investing activities in 2015 totaled $5,326 and consisted of acquisition of property, plant and equipment of $3,668 for DynaEnergetics and $1,376 for NobelClad.

Cash flows from financing activities

Net cash flows provided by financing activities for 2017 totaled $647, which included net borrowings on bank lines of credit of $2,000, offset by payment of quarterly dividends of $1,174.

Net cash flows used in financing activities for 2016 totaled $12,107, which included net repayments on bank lines of credit of $11,250 and payment of quarterly dividends of $1,150.

Net cash flows provided by financing activities for 2015 totaled $1,788, which included net borrowings on bank lines of credit of $5,003, payment of quarterly dividends of $2,260, and payment of deferred debt issuance costs of $1,222.

Critical Accounting Policies and Estimates

Our historical Consolidated Financial Statements and notes to our historical Consolidated Financial Statements contain information that is pertinent to our management’s discussion and analysis of financial condition and results of operations. Preparation of financial statements in conformity with accounting principles generally accepted in the United States requires that our management make estimates, judgments and assumptions that affect the reported amounts of assets, liabilities, revenues and expenses, and the disclosure of contingent assets and liabilities. However, the accounting principles used by us generally do not change our reported cash flows or liquidity. Existing rules must be interpreted and judgments made on how the specifics of a given rule apply to us.

In management’s opinion, the more significant reporting areas impacted by management’s judgments and estimates are revenue recognition, asset impairments, goodwill and other intangible assets, and income taxes. Management’s judgments and estimates in these areas are based on information available from both internal and external sources, and actual results could differ from the estimates, as additional information becomes known. We believe the following to be our most critical accounting policies.

Revenue recognition

Sales of clad metal products are generally based upon customer specifications set forth in customer purchase orders and require us to provide certifications relative to metals used, services performed and the results of any non-destructive testing that the customer has requested be performed. Issues of conformity of the product to specifications are resolved before the product is shipped and billed. Products related to the DynaEnergetics segment, which include detonating cords, detonators, bi-directional boosters and shaped charges, as well as seismic-related explosives and accessories, are standard in nature. In all cases, revenue is recognized only when all four of the following criteria have been satisfied: persuasive evidence of an arrangement exists; the price is fixed or determinable; delivery has occurred; and collection is reasonably assured.

In May 2014, the FASB issued a new standard related to revenue recognition. Under the standard, revenue is recognized when a customer obtains control of promised goods or services in an amount that reflects the consideration the Company expects to receive in exchange for those goods or services. In addition, the standard requires disclosure of the nature, amount, timing, and uncertainty of revenue and cash flows arising from contracts with customers.

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The standard will be effective for the Company on January 1, 2018. The standard can be adopted using either of two methods: (1) retrospective application to each prior reporting period presented with the option to elect certain practical expedients, as defined within the standard ("full retrospective") or (2) retrospective application with the cumulative effect of adoption recognized at the date of initial application and providing certain additional disclosures, as defined within the standard ("modified retrospective"). The Company will adopt the standard using the modified retrospective approach.

In preparation for adoption of the standard, the Company analyzed contracts from the NobelClad and DynaEnergetics segments to determine the technical accounting conclusions and the impact of the new revenue standard. In our NobelClad business, contracts are often for unique projects, but the vast majority of contracts contain standard terms and conditions. In our DynaEnergetics business, we sell a range of products to a wide variety of customers, but the contracts also often contain similar terms and conditions. We have reviewed NobelClad and DynaEnergetics revenue contracts and have concluded that applying the new standard will not have a material impact on our financial statements. The impact to our financial statements is not material because the analysis of our contracts under the new revenue recognition supports the recognition of revenue consistent with our current approach. Going forward, revenue on our contracts will continue to be recognized at the invoice price upon delivery to a customer because that is when our performance obligation is satisfied.

Inventories

Inventories are stated at the lower-of-cost (first-in, first-out) or net realizable value. Significant cost elements included in inventory are material, labor, freight, subcontract costs, and manufacturing overhead. As necessary, we record provisions and maintain reserves for excess, slow moving and obsolete inventory. To determine reserve amounts, we regularly review inventory quantities on hand and values, and compare them to estimates of future product demand, market conditions, production requirements and technological developments.

Asset impairments

Finite-lived assets are tested for impairment whenever events or changes in circumstances indicate that their carrying value may not be recoverable. We compare the expected undiscounted future operating cash flows associated with these finite-lived assets to their respective carrying values to determine if they are fully recoverable when indicators of impairment are present. If the expected future operating cash flows of an asset are not sufficient to recover the carrying value, we estimate the fair value of the asset. Impairment is recognized when the carrying amount of the asset is not recoverable and when carrying value exceeds fair value. Long-lived assets to be disposed of, if any, are reported at the lower of carrying amount or fair value less cost to sell.

In association with the 2015 and 2017 goodwill impairments, we tested finite-lived assets for impairment, and found that the carrying amounts of assets at the lowest level of identifiable cash flows, in this case our reporting units, are fully recoverable.

Business Combinations

We account for our business acquisitions using the purchase method of accounting. We allocate the total cost of the acquisition to the underlying net assets based on their respective estimated fair values. As part of this allocation process, we identify and attribute values and estimated lives to the intangible assets acquired. These determinations involve significant estimates and assumptions regarding multiple, highly subjective variables, including those with respect to future cash flows, discount rates, asset lives, and the use of different valuation models, and therefore require considerable judgment. Our estimates and assumptions are based, in part, on the availability of listed market prices or

other transparent market data. These determinations affect the amount of amortization expense recognized in future periods. We base our fair value estimates on assumptions we believe to be reasonable but are inherently uncertain.

Goodwill

Goodwill represents the excess of the purchase price in a business combination over the fair value of the net tangible and intangible assets acquired. The carrying value of goodwill is periodically reviewed for impairment (at a minimum annually) and whenever events or changes in circumstances indicate that the carrying amount of the asset may not be recoverable. Examples of such events or changes in circumstances, many of which are subjective in nature, include significant negative industry or economic trends, significant changes in the manner of our use of the acquired assets or our strategy, a significant decrease in the market value of the asset, and a significant change in legal factors or in the business climate that could affect the value of the asset.

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Our reporting units for goodwill impairment testing are currently the same as our reportable business segments: NobelClad and DynaEnergetics. Each business segment represents separately managed strategic business units, and our chief operating decision maker, our Chief Executive Officer, reviews financial results and evaluates operating performance at this level.

Goodwill impairment testing is performed annually as of December 31. We utilize an income approach (discounted cash flow analysis) to determine the fair value of each reporting unit. We believe the discounted cash flow approach is the most reliable indicator of fair value for our reporting units. The key assumptions used in the discounted cash flows for both reporting units include, among other measures, expected future sales, operating income, working capital and capital expenditures. Discount rates are determined using a peer-based, risk-adjusted weighted average cost of capital. Our approach also includes reviewing for reasonableness the total market capitalization of the Company as of December 31 to the sum of the discounted cash flows for the combined reporting units.

As required under Financial Accounting Standards Board (FASB) Accounting Standards Codification (ASC) 350, “Goodwill and Other Intangible Assets”, we routinely review the carrying value of our net assets, including goodwill, to determine if any impairment has occurred. At June 30, 2017, we conducted a quantitative assessment, at which time, based on existing conditions and management’s outlook, we determined there was no impairment of NobelClad's goodwill. In the third quarter of 2017, activity in NobelClad’s primary end markets slowed considerably. NobelClad experienced a significant decline in its small size core maintenance bookings within the oil and gas industry. Additionally, certain large petrochemical projects previously forecasted to ship in the next twelve months were delayed, and uncertainty existed as to the ultimate timing of booking and shipping these potential orders. As a result, we determined that a potential indicator of goodwill impairment existed during the third quarter of 2017. We utilized an income approach (discounted cash flow analysis) to determine the fair value of the NobelClad reporting unit and concluded that our long-term forecasts were not materializing and needed to be revised downward.

We determined that the estimated fair value of the NobelClad reporting unit was less than its carrying value primarily due to the factors described above and their related impact on expected future cash flows. During the third quarter, we adopted Accounting Standards Update ("ASU") 2017-04 which amends and simplifies how an entity measures a goodwill impairment loss by eliminating step two from the goodwill impairment test. As the carrying value of the NobelClad reporting unit exceeded the fair value by more than the book value of goodwill, we recorded an impairment charge of $17,584 to fully impair the goodwill related to this reporting unit as of September 30, 2017.

During the fourth quarter of 2015, we observed a decrease in the market capitalization of the Company, thereby providing a potential indicator of impairment, which coincided with our 2015 annual goodwill impairment tests. As a result of our impairment testing, we found that the fair value of the DynaEnergetics reporting unit was less than its carrying value due primarily to the sustained decline in global oil prices, expected reduction in exploration and production activities of certain of our customers, and the impact these factors had on our expected future cash flows. We valued the assets of DynaEnergetics and, based on the results of that valuation, recorded a goodwill impairment charge of $11,464, representing the entire goodwill balance as of December 31, 2015. The NobelClad reporting unit had a fair value that exceeded carrying value by approximately 19%. No impairment of goodwill was identified in connection with our 2016 annual goodwill impairment tests.

Income taxes

We recognize deferred tax assets and liabilities for the expected future income tax consequences of temporary differences between the financial reporting and tax bases of assets and liabilities. Any effects of changes in income tax rates or tax laws are included in the provision for income taxes in the period of enactment. The deferred income tax impact of tax credits are recognized as an immediate adjustment to income tax expense. We recognize deferred tax

assets for the expected future effects of all deductible temporary differences to the extent we believe these assets will more likely than not be realized. We record a valuation allowance when, based on current circumstances, it is more likely than not that all or a portion of the deferred tax assets will not be realized. In making such determination, we consider all available positive and negative evidence, including future reversals of existing taxable temporary differences, projected future taxable income, tax planning strategies, recent financial operations and their associated valuation allowances, if any.

We recognize the tax benefits from uncertain tax positions only when it is more likely than not, based on the technical merits of the position, the tax position will be sustained upon examination, including the resolution of any related appeals or litigation. The tax benefits recognized in the Consolidated Financial Statements from such a position are measured as the largest benefit that is more likely than not to be realized upon ultimate resolution. We recognize interest and penalties related to uncertain tax positions in operating expense.

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Off Balance Sheet Arrangements

At December 31, 2017, we had no off-balance sheet arrangements, as defined by SEC rules, that have or are reasonably likely to have a material current or future effect on our financial condition, revenues or expenses, results of operations, liquidity, capital expenditures or capital resources.

Recent Accounting Pronouncements

Please refer to Note 2 "Significant Accounting Policies" to our Consolidated Financial Statements in this annual report for a discussion of recent accounting pronouncements and their anticipated effect on our business.

ITEM 7A. Quantitative and Qualitative Disclosures about Market Risk

Foreign Currency Risk

Our Consolidated Financial Statements are expressed in U.S. dollars, but a portion of our business is conducted in currencies other than U.S. dollars. Changes in the exchange rates for such currencies into U.S. dollars can affect our revenues, earnings, and the carrying value of our assets and liabilities in our Consolidated Balance Sheets, either positively or negatively. Sales made in currencies other than U.S. dollars accounted for 28%, 28%, and 23% of total sales for the years ended 2017, 2016, and 2015, respectively. As a result of foreign currency risk, we may experience economic loss and a negative impact on earnings and equity with respect to our holdings solely as a result of foreign currency exchange rate fluctuations. Our primary exposure to foreign currency risk is the Euro due to the percentage of our U.S. dollar revenue that is derived from countries where the Euro is the functional currency and the Russian Ruble due to DynaEnergetics' manufacturing and sales operations in Tyumen, Siberia.

We use foreign currency forward contracts to offset foreign exchange rate fluctuation on foreign currency denominated asset and liability positions. Foreign currency forward contracts are sensitive to changes in foreign currency exchange rates. Consistent with the use of these contracts to neutralize the effect of exchange rate fluctuations, such unrealized losses or gains would be offset by corresponding gains or losses, respectively, in the remeasurement of the asset and liability positions being hedged. As such, these forward currency contracts and the offsetting underlying asset and liability positions do not create material market risk.

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ITEM 8. Financial Statements and Supplementary Data

DMC GLOBAL INC.
INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

As of December 31, 2017 and 2016 and for Each of the Three Years Ended
December 31, 2017, 2016 and 2015

The consolidated financial statement schedules required by Regulation S-X are filed under Item 15 "Exhibits and Financial Statement Schedules".

Report of Independent Registered Public Accounting Firm

To The Shareholders and the
Board of Directors of DMC Global Inc.

Opinion on the Financial Statements
We have audited the accompanying consolidated balance sheets of DMC Global Inc. (the Company) as of December 31, 2017 and 2016, and the related consolidated statements of operations, comprehensive income (loss), stockholders' equity and cash flows for each of the three years in the period ended December 31, 2017, and the related notes and financial statement schedules listed in the Index at Item 15(a) (collectively referred to as the “consolidated financial statements”). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2017 and 2016, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2017, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2017, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework), and our report dated March 8, 2018 expressed an unqualified opinion thereon.

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

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

/s/ Ernst & Young LLP

We have served as the Company’s auditor since 2002.

Denver, Colorado
March 8, 2018

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DMC GLOBAL INC.
CONSOLIDATED BALANCE SHEETS
(Amounts in Thousands, Except Share and Per Share Data)

	As of December 31,	
	2017	2016
ASSETS		
CURRENT ASSETS:		
Cash and cash equivalents	$8,983	$6,419
Accounts receivable, net of allowance for doubtful accounts of $1,088 and $1,146, respectively	49,468	32,959
Inventory, net	35,742	28,833
Prepaid expenses and other	5,763	5,148
Total current assets	99,956	73,359
PROPERTY, PLANT AND EQUIPMENT	121,339	109,427
Less - accumulated depreciation	(61,467)	(52,294)
Property, plant and equipment, net	59,872	57,133
GOODWILL, net	—	16,097
PURCHASED INTANGIBLE ASSETS, net	12,861	15,827
DEFERRED TAX ASSETS	98	—
OTHER ASSETS, net	296	139
TOTAL ASSETS	$173,083	$162,555

The accompanying notes are an integral part of these Consolidated Financial Statements.

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DMC GLOBAL INC.
CONSOLIDATED BALANCE SHEETS
(Amounts in Thousands, Except Share and Per Share Data)

	As of December 31,	
	2017	2016
LIABILITIES AND STOCKHOLDERS' EQUITY		
CURRENT LIABILITIES:		
Accounts payable	$19,826	$13,260
Accrued expenses	6,884	4,173
Accrued anti-dumping duties	3,609	6,550
Dividend payable	295	290
Accrued income taxes	2,939	548
Accrued employee compensation and benefits	6,186	3,307
Customer advances	5,888	2,619
Total current liabilities	45,627	30,747
LINES OF CREDIT	17,984	15,732
DEFERRED TAX LIABILITIES	573	1,448
OTHER LONG-TERM LIABILITIES	3,119	2,219
Total liabilities	67,303	50,146
COMMITMENTS AND CONTINGENT LIABILITIES (See Note 8)	—	—
STOCKHOLDERS' EQUITY:		
Preferred stock, $0.05 par value; 4,000,000 shares authorized; no issued and outstanding shares	—	—
Common stock, $0.05 par value; 25,000,000 shares authorized; 14,782,018 and 14,496,359 shares outstanding, respectively	741	725
Additional paid-in capital	76,146	73,116
Retained earnings	60,074	80,107
Other cumulative comprehensive loss	(30,819)	(41,514)
Treasury stock, at cost; 39,783 and 2,378 shares, respectively	(362)	(25)
Total stockholders' equity	105,780	112,409
TOTAL LIABILITIES AND STOCKHOLDERS' EQUITY	$173,083	$162,555

The accompanying notes are an integral part of these Consolidated Financial Statements.

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DMC GLOBAL INC.
CONSOLIDATED STATEMENTS OF OPERATIONS
(Amounts in Thousands, Except Share and Per Share Data)

	Year Ended December 31,		
	2017	2016	2015
NET SALES	$192,803	$158,575	$166,918
COST OF PRODUCTS SOLD	133,412	119,895	131,294
Gross profit	59,391	38,680	35,624
COSTS AND EXPENSES:			
General and administrative expenses	27,135	22,115	20,998
Selling and distribution expenses	18,589	16,626	18,745
Amortization of purchased intangible assets	4,060	4,011	4,033
Restructuring expenses	4,283	1,202	4,063
Goodwill impairment charge	17,584	—	11,464
Total costs and expenses	71,651	43,954	59,303
OPERATING LOSS	(12,260)	(5,274)	(23,679)
OTHER INCOME (EXPENSE):			
Other income (expense), net	(1,376)	633	(669)
Interest expense	(1,651)	(1,070)	(1,745)
Interest income	3	3	4
LOSS BEFORE INCOME TAXES	(15,284)	(5,708)	(26,089)
INCOME TAX PROVISION (BENEFIT)	3,569	797	(2,118)
NET LOSS	(18,853)	(6,505)	(23,971)
LOSS PER SHARE			
Basic	$(1.31)	$(0.46)	$(1.72)
Diluted	$(1.31)	$(0.46)	$(1.72)
WEIGHTED AVERAGE NUMBER OF SHARES OUTSTANDING:			
Basic	14,346,851	14,126,108	13,935,097
Diluted	14,346,851	14,126,108	13,935,097
DIVIDENDS DECLARED PER COMMON SHARE	$0.08	$0.08	$0.14

The accompanying notes are an integral part of these Consolidated Financial Statements.

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DMC GLOBAL INC.
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)
(Amounts in Thousands)

	Year Ended December 31,		
	2017	2016	2015
Net loss	$(18,853)	$(6,505)	$(23,971)
Change in cumulative foreign currency translation adjustment	10,695	(1,049)	(13,869)
Total comprehensive loss	$(8,158)	$(7,554)	$(37,840)

The accompanying notes are an integral part of these Consolidated Financial Statements.

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DMC GLOBAL INC.
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
(Amounts in Thousands, Except Share Data)

	DMC Global Inc. Stockholders							
	Common Stock		Additional Paid-In	Retained	Other Cumulative Comprehensive	Treasury Stock		
	Shares	Amount	Capital	Earnings	Loss	Shares	Amount	Total
Balances, December 31, 2014	13,997,076	$ 700	$67,088	$113,723	$ (26,596)	—	$—	$154,915
Net loss	—	—	—	(23,971)	—	—	—	(23,971)
Change in cumulative foreign currency translation adjustment	—	—	—	—	(13,869)	—	—	(13,869)
Shares issued in connection with stock compensation plans	215,039	11	261	—	—	—	—	272
Tax impact of stock-based compensation	—	—	(303)	—	—	—	—	(303)
Stock-based compensation	—	—	3,362	—	—	—	—	3,362
Dividends declared	—	—	—	(1,985)	—	—	—	(1,985)
Balances, December 31, 2015	14,212,115	$ 711	$70,408	$87,767	$ (40,465)	—	$—	$118,421
Net loss	—	—	—	(6,505)	—	—	—	(6,505)
Change in cumulative foreign currency translation adjustment	—	—	—	—	(1,049)	—	—	(1,049)
Shares issued in connection with stock compensation plans	286,622	14	308	—	—	—	—	322
Stock-based compensation	—	—	2,400	—	—	—	—	2,400
Dividends declared	—	—	—	(1,155)	—	—	—	(1,155)
Treasury stock purchases	—	—	—	—	—	(2,378)	(25)	(25)
Balances, December 31, 2016	14,498,737	$ 725	$73,116	$80,107	$ (41,514)	(2,378)	$(25)	$112,409
Net loss	—	—	—	(18,853)	—	—	—	(18,853)
Change in cumulative foreign currency translation adjustment	—	—	—	—	10,695	—	—	10,695
Shares issued in connection with stock compensation plans	323,064	16	280	—	—	—	—	296
Stock-based compensation	—	—	2,750	—	—	—	—	2,750
Dividends declared	—	—	—	(1,180)	—	—	—	(1,180)
Treasury stock purchases	—	—	—	—	—	(37,405)	(337)	(337)
Balances, December 31, 2017	14,821,801	$ 741	$76,146	$60,074	$ (30,819)	(39,783)	$(362)	$105,780

The accompanying notes are an integral part of these Consolidated Financial Statements.

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DMC GLOBAL INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS
(Amounts in Thousands)

	Year Ended December 31,		
	2017	2016	2015
CASH FLOWS FROM OPERATING ACTIVITIES:			
Net loss	$(18,853)	$(6,505)	$(23,971)
Adjustments to reconcile net loss to net cash provided by operating activities:			
Depreciation (including capital lease amortization)	6,506	6,756	6,244
Amortization of purchased intangible assets	4,060	4,011	4,033
Amortization and write-off of deferred debt issuance costs	390	156	752
Stock-based compensation	2,975	2,326	2,826
Deferred income tax benefit	(556)	(284)	(725)
(Gain) loss on disposal of property, plant and equipment	125	455	(23)
Restructuring and asset impairment expenses	4,283	1,202	4,063
Goodwill impairment charge	17,584	—	11,464
Transition tax liability	946	—	—
Other	—	—	23
Change in:			
Accounts receivable, net	(14,425)	2,679	(2,394)
Inventory, net	(5,294)	6,829	1,386
Prepaid expenses and other	(440)	1,002	(3,570)
Accounts payable	5,216	(1,338)	758
Customer advances	3,207	223	(857)
Accrued anti-dumping duties	(2,941)	176	6,374
Accrued expenses and other liabilities	3,964	510	(4,765)
Net cash provided by operating activities	6,747	18,198	1,618
CASH FLOWS FROM INVESTING ACTIVITIES:			
Acquisition of property, plant and equipment	(6,186)	(5,719)	(5,433)
Proceeds on sale of property, plant and equipment	2	26	—
Change in other non-current assets	—	(9)	107
Net cash used in investing activities	(6,184)	(5,702)	(5,326)
CASH FLOWS FROM FINANCING ACTIVITIES:			
Borrowings (payments) on lines of credit	2,000	(11,250)	5,003
Payment on capital lease obligations	—	(4)	(5)
Payment of dividends	(1,174)	(1,150)	(2,260)
Payment of deferred debt issuance costs	(138)	—	(1,222)
Net proceeds from issuance of common stock to employees and directors	296	322	272
Treasury stock purchases	(337)	(25)	—
Net cash provided by (used in) financing activities	647	(12,107)	1,788
EFFECTS OF EXCHANGE RATES ON CASH	1,354	(261)	(1,189)
NET INCREASE (DECREASE) IN CASH AND CASH EQUIVALENTS	2,564	128	(3,109)

CASH AND CASH EQUIVALENTS, beginning of the period	6,419	6,291	9,400
CASH AND CASH EQUIVALENTS, end of the period	8,983	6,419	6,291
SUPPLEMENTAL DISCLOSURE OF CASH FLOW INFORMATION:			
Cash paid during the period for -			
Interest	$1,150	$575	$624
Income taxes, net	$124	$354	$2,491

The accompanying notes are an integral part of these Consolidated Financial Statements.

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DMC GLOBAL INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
DECEMBER 31, 2017
(Amounts in Thousands, Except Share and Per Share Data)

1. ORGANIZATION AND BUSINESS

DMC Global Inc. (“DMC”, "we", "us", "our", or the "Company") was incorporated in the state of Colorado in 1971 and reincorporated in the state of Delaware in 1997. DMC is headquartered in Boulder, Colorado and has manufacturing facilities in the United States, Germany, France, and Russia. Customers are located throughout the world. DMC currently operates two business segments: NobelClad and DynaEnergetics. NobelClad metallurgically joins or alters metals by using explosives. DynaEnergetics manufactures, markets, and sells oilfield perforating equipment and explosives.

Restructuring

Throughout 2015, 2016, and 2017 we restructured operations within NobelClad and DynaEnergetics and eliminated positions within our corporate office. See Note 9 "Restructuring" for additional disclosures regarding these restructuring charges.

2. SIGNIFICANT ACCOUNTING POLICIES

Principles of Consolidation

The Consolidated Financial Statements include the accounts of DMC and its controlled subsidiaries. Only subsidiaries in which controlling interests are maintained are consolidated. All significant intercompany accounts, profits, and transactions have been eliminated in consolidation.

Use of Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States (U.S. GAAP) requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from these estimates.

Foreign Operations and Foreign Exchange Rate Risk

The functional currency for our foreign operations is the applicable local currency for each affiliate company. Assets and liabilities of foreign subsidiaries for which the functional currency is the local currency are translated at exchange rates in effect at period-end, and the statements of operations are translated at the average exchange rates during the period. Exchange rate fluctuations on translating foreign currency financial statements into U.S. dollars that result in unrealized gains or losses are referred to as translation adjustments. Cumulative translation adjustments are recorded as a separate component of stockholders’ equity and are included in other cumulative comprehensive loss. Transactions denominated in currencies other than the functional currency are recorded based on exchange rates at the time such transactions arise. Subsequent changes in exchange rates result in transaction gains and losses, which are reflected in other income (expense) as unrealized (based on period-end translations) or realized upon settlement of the transactions. Cash flows from our operations in foreign countries are translated at actual exchange rates when known, or at the average rate for the period. As a result, amounts related to assets and liabilities reported in the Consolidated

Statements of Cash Flows will not agree to changes in the corresponding balances in the Consolidated Balance Sheets. The effects of exchange rate changes on cash balances held in foreign currencies are reported as a separate line item below cash flows from financing activities.

Cash and Cash Equivalents

For purposes of the Consolidated Financial Statements, we consider highly liquid investments purchased with an original maturity of three months or less to be cash equivalents.

Accounts Receivable

We review our accounts receivable balance routinely to identify any specific customers with collectability issues. In circumstances where we are aware of a specific customer’s inability to meets its financial obligation to us, we record a specific

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allowance for doubtful accounts (with the offsetting expense charged to selling and distribution expenses in our Consolidated Statements of Operations) against the amounts due reducing the net recognized receivable to the amount we estimate will be collected.

Inventories

Inventories are stated at the lower-of-cost (first-in, first-out) or net realizable value. Significant cost elements included in inventory are material, labor, freight, subcontract costs, and manufacturing overhead. As necessary, we record provisions and maintain reserves for excess, slow moving and obsolete inventory. To determine reserve amounts, we regularly review inventory quantities on hand and values, and compare them to estimates of future product demand, market conditions, production requirements and technological developments.

For the twelve months ended December 31, 2017, 2016, and 2015, changes in our inventory reserves as recognized in our Consolidated Balance Sheets and Statements of Operations consisted of the following:

	2017	2016	2015
(Decrease) increase in inventory reserve	$(1,158)	$544	$565
Expense recorded	(22)	1,738	1,952

Inventories, net of reserves of $3,068 and $4,226 most of which related to finished goods, consist of the following at December 31, 2017 and 2016 respectively:

	2017	2016
Raw materials	$16,255	$10,926
Work-in-process	6,120	5,417
Finished goods	13,049	12,146
Supplies	318	344
	$35,742	$28,833

Shipping and handling costs incurred by us upon shipment to customers are included in cost of products sold in the accompanying Consolidated Statements of Operations.

Property, Plant and Equipment

Property, plant and equipment are recorded at cost, except for assets acquired in acquisitions which are recorded at fair value. Additions and improvements are capitalized. Maintenance and repairs are charged to operations as costs are incurred. Depreciation is computed using the straight-line method over the estimated useful life of the related asset (except leasehold improvements which are depreciated over the shorter of their estimated useful life or the lease term) as follows:

Buildings and improvements	15-30 years
Manufacturing equipment and tooling	3-15 years
Furniture, fixtures, and computer equipment	3-10 years
Other	3-10 years

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Gross property, plant and equipment consist of the following at December 31, 2017 and 2016:

	2017	2016
Land	$3,560	$3,654
Buildings and improvements	46,270	41,952
Manufacturing equipment and tooling	46,814	42,851
Furniture, fixtures and computer equipment	17,266	15,997
Other	3,296	4,152
Construction in process	4,133	821
	$121,339	$109,427

Asset Impairments

Finite-lived assets are tested for impairment whenever events or changes in circumstances indicate that their carrying value may not be recoverable. We compare the expected undiscounted future operating cash flows associated with these finite-lived assets to their respective carrying values to determine if they are fully recoverable when indicators of impairment are present. If the expected future operating cash flows of an asset are not sufficient to recover the carrying value, we estimate the fair value of the asset. Impairment is recognized when the carrying amount of the asset is not recoverable and when carrying value exceeds fair value. Long-lived assets to be disposed of, if any, are reported at the lower of carrying amount or fair value less cost to sell.

For the year ended December 31, 2017, we recognized an impairment charge of approximately $1,241 (recorded in restructuring expenses) associated with restructuring our NobelClad operations in France, related to assets used in the explosion cladding process. The fair value of applicable French assets upon which an impairment charge was taken was primarily based upon the utilization of a third-party appraiser. For the year ended December 31, 2015, we recognized an impairment charge of approximately $205 (recorded in restructuring expenses) associated with restructuring our DynaEnergetics operations in Canada and Colombia. The impairment charges were primarily associated with assets used in the perforating gun manufacturing facility and distribution center in Edmonton, Alberta and the distribution centers in Colombia, all of which were closed under the restructuring program (See Note 9 "Restructuring").

Goodwill

Goodwill represents the excess of the purchase price in a business combination over the fair value of the net tangible and intangible assets acquired. The carrying value of goodwill is periodically reviewed for impairment (at a minimum annually) and whenever events or changes in circumstances indicate that the carrying amount of the asset may not be recoverable. Examples of such events or changes in circumstances, many of which are subjective in nature, include significant negative industry or economic trends, significant changes in the manner of our use of the acquired assets or our strategy, a significant decrease in the market value of the assets, and a significant change in legal factors or in the business climate that could affect the value of the assets.

Our reporting units for goodwill impairment testing are the same as our reportable business segments: NobelClad and DynaEnergetics. Each business segment represents separately managed strategic business units and our chief operating decision maker, our Chief Executive Officer, reviews financial results and evaluates operating performance at this level. Goodwill impairment testing is performed annually as of December 31.

As required under Financial Accounting Standards Board ("FASB") Accounting Standards Codification ("ASC") 350, “Goodwill and Other Intangible Assets”, we routinely review the carrying value of our net assets, including goodwill, to

determine if any impairment has occurred. At June 30, 2017, we conducted a quantitative assessment, at which time, based on existing conditions and management’s outlook, we determined there was no impairment of NobelClad's goodwill. In the third quarter of 2017, activity in NobelClad’s primary end markets slowed considerably. NobelClad experienced a significant decline in its small size core maintenance bookings within the oil and gas industry. Additionally, certain large petrochemical projects previously forecasted to ship in the next twelve months were delayed, and uncertainty existed as to the ultimate timing of booking and shipping these potential orders. As a result, we determined that a potential indicator of goodwill impairment existed during the third quarter of 2017. We utilized an income approach (discounted cash flow analysis) to determine the fair value of the NobelClad reporting unit and concluded that our long-term forecasts were not materializing and needed to be

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revised downward. We believe the discounted cash flow approach is the most reliable indicator of fair value. The key assumptions used in the discounted cash flow analysis included, among other measures, expected future sales, operating income, working capital and capital expenditures. The discount rate was determined using a peer-based, risk-adjusted weighted average cost of capital.

We determined that the estimated fair value of the NobelClad reporting unit was less than its carrying value primarily due to the factors described above and their related impact on expected future cash flows. During the third quarter, we adopted FASB accounting standards update ("ASU") 2017-04 which amends and simplifies how an entity measures a goodwill impairment loss by eliminating step two from the goodwill impairment test. As the carrying value of the NobelClad reporting unit exceeded the fair value by more than the book value of goodwill, we recorded an impairment charge of $17,584 to fully impair the goodwill related to this reporting unit as of September 30, 2017.

No impairment of goodwill was identified in connection with our 2016 annual goodwill impairment test as our estimated fair value exceeded the carrying value.

During the fourth quarter of 2015, we observed a decrease in the market capitalization of the Company, thereby providing a potential indicator of impairment, which coincided with our 2015 annual goodwill impairment tests. We utilized an income approach (discounted cash flow analysis) to determine the fair value of each reporting unit.

We determined that the fair value of the DynaEnergetics reporting unit was less than its carrying value due primarily to the sustained decline in global oil prices at the time, expected reduction in exploration and production activities of certain of our customers, and the impact these factors had on our expected future cash flows. We valued the assets of DynaEnergetics with the assistance of a third-party valuation specialist, and based on the results of that valuation, we recorded a goodwill impairment charge of $11,464 to impair fully the goodwill related to the DynaEnergetics reporting unit. As of December 31, 2015, the fair value of the NobelClad reporting unit exceeded the carrying value of its net assets.

The changes to the carrying amount of goodwill during the periods are summarized below. For the periods presented, all of the changes were within our NobelClad segment.

Goodwill balance at December 31, 2015	$17,190
Adjustment due to recognition of tax benefit of tax amortization of certain goodwill	(507)
Adjustment due to exchange rate differences	(586)
Goodwill balance at December 31, 2016	16,097
Adjustment due to recognition of tax benefit of tax amortization of certain goodwill	(450)
Adjustment due to exchange rate differences	1,937
Goodwill impairment	(17,584)
Goodwill balance at December 31, 2017	$—

Purchased Intangible Assets

Our purchased intangible assets include finite-lived core technology, customer relationships and trademarks/trade names. For purchased intangible assets, we performed an assessment of the recoverability in accordance with the general valuation requirements set forth under ASC 360, “Accounting for the Impairment of Long-Lived Assets.” If impairment indicators are present, estimated undiscounted future cash flows associated with applicable assets or operations are compared with their carrying value to determine if a write-down to fair value is required. During the years ended December 31, 2017, 2016, and 2015, we tested finite-lived intangibles for impairment, and found that the

carrying amounts of assets at the lowest level of identifiable cash flows, in each case our reporting units, are fully recoverable.

Finite-lived intangible assets are amortized over the estimated useful life of the related assets which have a weighted average amortization period of 12 years in total. The weighted average amortization periods of the intangible assets by asset category are as follows:

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Core technology	20 years
Customer relationships	9 years
Trademarks / Trade names	9 years

The following table presents details of our purchased intangible assets, other than goodwill, as of December 31, 2017:

	Gross	Accumulated Amortization	Net
Core technology	$20,027	$ (10,333)	$9,694
Customer relationships	39,244	(36,077)	3,167
Trademarks / Trade names	2,149	(2,149)	—
Total intangible assets	$61,420	$ (48,559)	$12,861

The following table presents details of our purchased intangible assets, other than goodwill, as of December 31, 2016:

	Gross	Accumulated Amortization	Net
Core technology	$17,751	$ (8,165)	$9,586
Customer relationships	36,088	(29,965)	6,123
Trademarks / Trade names	1,903	(1,785)	118
Total intangible assets	$55,742	$ (39,915)	$15,827

The change in the gross value of our purchased intangible assets from December 31, 2016 to December 31, 2017 was due to foreign currency translation and an adjustment due to recognition of tax benefit of tax amortization previously applied to certain goodwill related to the NobelClad and DynaEnergetics reporting units. After the goodwill was written off at September 30, 2017 and December 31, 2015, respectively, the tax amortization reduces other noncurrent intangible assets related to the historical acquisition.

Expected future amortization of intangible assets is as follows:

For the years ended December 31 -	
2018	$2,984
2019	1,669
2020	1,669
2021	1,304
2022	1,067
Thereafter	4,168
	$12,861

Customer Advances

On occasion, we require customers to make advance payments prior to the shipment of their orders in order to help finance our inventory investment on large orders or to keep customers' credit limits at acceptable levels. As of December 31, 2017 and 2016 customer advances totaled $5,888 and $2,619, respectively, and originated from several customers.

Revenue Recognition

Sales of clad metal products are generally based upon customer specifications set forth in customer purchase orders and require us to provide certifications relative to metals used, services performed, and the results of any non-destructive testing

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that the customer has requested be performed. Issues of conformity of the product to specifications are resolved before the product is shipped and billed. Products related to the DynaEnergetics segment, which include detonating cords, detonators, bi-directional boosters, and shaped charges, as well as seismic related explosives and accessories, are standard in nature. In all cases, revenue is recognized only when all four of the following criteria have been satisfied: persuasive evidence of an arrangement exists; the price is fixed or determinable; delivery has occurred; and collection is reasonably assured.

In May 2014, the FASB issued a new standard related to revenue recognition. Under the standard, revenue is recognized when a customer obtains control of promised goods or services in an amount that reflects the consideration the company expects to receive in exchange for those goods or services. In addition, the standard requires disclosure of the nature, amount, timing, and uncertainty of revenue and cash flows arising from contracts with customers.

The standard will be effective for the Company on January 1, 2018. The standard can be adopted using either of two methods: (1) retrospective application to each prior reporting period presented with the option to elect certain practical expedients, as defined within the standard ("full retrospective") or (2) retrospective application with the cumulative effect of adoption recognized at the date of initial application and providing certain additional disclosures, as defined within the standard ("modified retrospective"). The Company will adopt the standard using the modified retrospective approach.

In preparation for adoption of the standard, the Company analyzed contracts from the NobelClad and DynaEnergetics segments to determine the technical accounting conclusions and the impact of the new revenue standard. In our NobelClad business, contracts are often for unique projects, but the vast majority of contracts contain standard terms and conditions. In our DynaEnergetics business, we sell a range of products to a wide variety of customers, but the contracts also often contain similar terms and conditions. We have reviewed NobelClad and DynaEnergetics revenue contracts and have concluded that applying the new standard will not have a material impact on our financial statements. The impact to our financial statements is not material because the analysis of our contracts under the new revenue recognition standard supports the recognition of revenue consistent with our current approach. Going forward, revenue from our contracts will continue to be recognized at the invoice price upon delivery to a customer because that is when our performance obligation is satisfied.

Research and Development

Research and development costs include expenses associated with developing new products and processes as well as improvements to current manufacturing processes. Research and development costs are included in our cost of products sold and are as follows for the years ended December 31, 2017, 2016 and 2015:

	2017	2016	2015
DynaEnergetics research and development costs	$4,335	$3,990	$2,357
NobelClad research and development costs	833	609	685
Total research and development costs	$5,168	$4,599	$3,042

Earnings Per Share

Unvested awards of share-based payments with rights to receive dividends or dividend equivalents are considered participating securities for purposes of calculating earnings per share (“EPS”) and require the use of the two class method for calculating EPS. Under this method, a portion of net income is allocated to these participating securities and therefore is excluded from the calculation of EPS allocated to common stock. Because we are in a net loss position for the years ended December 31, 2017, 2016 and 2015, potentially dilutive shares of 128,633, 166,368, and 87,888, respectively, are anti-dilutive and are excluded from the determination of diluted EPS.

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Computation and reconciliation of earnings per common share for the years ended December 31, 2017, 2016 and 2015 are as follows:

	2017	2016	2015
Numerator:			
Net loss	$ (18,853)	$ (6,505)	$ (23,971)
Less income allocated to RSAs	—	—	—
Net loss allocated to common stock for EPS calculation	$ (18,853)	$ (6,505)	$ (23,971)
Denominator:			
Weighted average common shares outstanding - basic	14,346,851	14,126,108	13,935,097
Dilutive stock-based compensation plans	—	—	—
Weighted average common shares outstanding - diluted	14,346,851	14,126,108	13,935,097
Net loss allocated to common stock for EPS calculation:			
Basic	$ (1.31)	$ (0.46)	$ (1.72)
Diluted	$ (1.31)	$ (0.46)	$ (1.72)

Fair Value of Financial Instruments

Fair value is defined as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. We are required to use an established hierarchy for fair value measurements based upon the inputs to the valuation and the degree to which they are observable or not observable in the market. The three levels in the hierarchy are as follows:

•Level 1 — Inputs to the valuation based upon quoted prices (unadjusted) for identical assets or liabilities in active markets that are accessible as of the measurement date.

•Level 2 — Inputs to the valuation include quoted prices in either markets that are not active, or in active markets for similar assets or liabilities, inputs other than quoted prices that are observable, and inputs that are derived principally from or corroborated by observable market data.

•Level 3 — Inputs to the valuation that are unobservable inputs for the asset or liability.

The highest priority is assigned to Level 1 inputs and the lowest priority to Level 3 inputs.

The carrying value of cash and cash equivalents, trade accounts receivable and payables, accrued expenses and lines of credit approximate their fair value, and these are considered Level 1 assets and liabilities. Our foreign currency forward contracts are valued using quoted market prices or are determined using a yield curve model based on current market rates. As a result, we intend to classify these investments as Level 2 in the fair value hierarchy.

We did not hold any Level 3 assets or liabilities as of December 31, 2017 or December 31, 2016. The goodwill impairment charges recorded in the third quarter of 2017 and fourth quarter of 2015 were calculated using Level 3 inputs.

Income Taxes

We recognize deferred tax assets and liabilities for the expected future income tax consequences of temporary differences between the financial reporting and tax bases of assets and liabilities. Any effects of changes in income tax rates or tax laws are included in the provision for income taxes in the period of enactment. The deferred income tax

impact of tax credits are recognized as an immediate adjustment to income tax expense. We recognize deferred tax assets for the expected future effects of all deductible temporary differences to the extent we believe these assets will more likely than not be realized. We record a valuation allowance when, based on current circumstances, it is more likely than not that all or a portion of the deferred tax assets will not be realized. In making such determination, we consider all available positive and negative evidence, i

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ncluding future reversals of existing taxable temporary differences, projected future taxable income, tax planning strategies, recent financial operations and their associated valuation allowances, if any.

We recognize the tax benefits from uncertain tax positions only when it is more likely than not, based on the technical merits of the position, that the tax position will be sustained upon examination, including the resolution of any related appeals or litigation. The tax benefits recognized in the Consolidated Financial Statements from such a position are measured as the largest benefit that is more likely than not to be realized upon ultimate resolution. We recognize interest and penalties related to uncertain tax positions in operating expense.

See Note 5 "Income Taxes" for more information on our income taxes, including discussion of the Tax Cuts and Jobs Act of 2017.

Concentration of Credit Risk and Off Balance Sheet Arrangements

Financial instruments, which potentially subject us to a concentration of credit risk, consist primarily of cash, cash equivalents, and accounts receivable. Generally, we do not require collateral to secure receivables. At December 31, 2017, we had no financial instruments with off-balance sheet risk of accounting losses.

Other Cumulative Comprehensive Loss

Other cumulative comprehensive loss as of December 31, 2017, 2016, and 2015 consisted entirely of currency translation adjustments including those in intra-entity foreign currency transactions that are long-term investments.

Recently Adopted Accounting Standards

In July 2015, the FASB issued an ASU to change the measurement of inventory from lower of cost or market to lower of cost or net realizable value. This pronouncement is effective for reporting periods beginning after December 15, 2016, and the Company adopted this ASU in the first quarter of 2017. The adoption of this standard did not have a material impact on the Company's Consolidated Financial Statements.

Recent Accounting Pronouncements

In February 2016, the FASB issued an ASU which amends the existing accounting standards for lease accounting, including requiring lessees to recognize most leases on their Balance Sheets and making targeted changes to lessor accounting. This ASU will be effective beginning in the first quarter of 2019. Early adoption is permitted. The new leases standard requires a modified retrospective transition approach for all leases existing at, or entered into after, the date of initial application, with an option to use certain transition relief. The Company is currently evaluating the impact of adopting the new leases standard on our Consolidated Financial Statements.

In October 2016, the FASB issued an ASU which removes the prohibition against the immediate recognition of the current and deferred income tax effects of intra-entity transfers of assets other than inventory. This ASU is effective for public business entities in fiscal years beginning after December 15, 2017, including interim periods within those fiscal years. The Company is in the process of evaluating the impact of adopting this standard on its Consolidated Financial Statements.

3. DEBT

Lines of credit consisted of the following at December 31, 2017 and 2016:

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	2017	2016
Syndicated credit agreement:		
U.S. Dollar revolving loan	$18,250	$16,250
Euro revolving loan	—	—
Commerzbank line of credit	—	—
	18,250	16,250
Less current portion	—	—
Long-term lines of credit	18,250	16,250
Less: debt issuance costs	266	518
Lines of credit	$17,984	$15,732

Syndicated Credit Agreement

As of December 31, 2017, we had a $35,000 syndicated credit agreement (“credit facility”) that allowed for revolving loans of $30,000 in U.S. dollars and $5,000 in alternative currencies as well as a $25,000 accordion feature to increase the commitments in any of the loan classes subject to approval by applicable lenders.

On February 23, 2015, we entered into the credit facility as a five-year $150,000 agreement which amended and replaced in its entirety our prior syndicated credit facility entered into on December 11, 2011. The credit facility allowed for revolving loans of $90,000 in US dollars, $10,000 in alternative currencies and a $50,000 US dollar term loan facility as well as a $100,000 accordion feature to increase the commitments in any of the three previous loan classes subject to approval by applicable lenders. The credit facility is secured by the assets of DMC including accounts receivable, inventory, and fixed assets, as well as guarantees and share pledges by DMC and its subsidiaries. On December 18, 2015, we entered into an amendment which reduced the amount of U.S. borrowings available under the credit facility to $65,000 from $90,000 and eliminated the $50,000 term loan facility, and increased the maximum debt-to-EBITDA leverage ratio until the December 31, 2016 reporting period. On December 30, 2016, we entered into a second amendment which clarified the treatment of cash income tax refunds in the calculation of the debt service coverage ratio and the insurance requirements for the Company.

On March 6, 2017, we entered into a third amendment which, among other changes, reduced the amount of borrowings available under the credit facility from $75,000 to $35,000, consisting of revolving loans of $30,000 in U.S. dollars and $5,000 in alternative currencies. The amendment increased the maximum debt-to-EBITDA leverage ratio from 3.00x to 4.00x for the March 31, 2017 reporting period, 5.00x for the June 30, 2017 reporting period and 3.50x for the September 30, 2017 reporting period. The maximum debt-to-EBITDA leverage ratio returned to 3.00x for the December 31, 2017 reporting period and thereafter. The third amendment also waived the applicability of the minimum debt service coverage ratio for the March 31, 2017 reporting period, the June 30, 2017 reporting period, and the September 30, 2017 reporting period, and added a minimum EBITDA covenant that required Consolidated Pro Forma EBITDA (as defined in the agreement) of at least $4,500 for the March 31, 2017 reporting period, at least $4,000 for the June 30, 2017 reporting period, at least $6,500 for the September 30, 2017 reporting period, and was inapplicable thereafter. The debt service coverage ratio returned to 1.35x for the December 31, 2017 reporting period and thereafter. The spread to London Interbank Offered Rate (“LIBOR”) on borrowings increased 0.50% basis points across the previous pricing grid. If the leverage ratio equals or exceeds 3.00x, the interest margin applicable to outstanding borrowings will be LIBOR plus 3.25% and an undrawn fee of 0.50% will apply to any undrawn amounts.

U.S. borrowings under the amended credit facility can be in the form of Alternate Base Rate loans (“ABR” borrowings are based on the greater of adjusted Prime rates, adjusted CD rates, or adjusted Federal Funds rates) or one, two, three, or six month LIBOR loans. ABR loans bear interest at the defined ABR rate plus an applicable margin and LIBOR loans bear interest at the applicable LIBOR rate plus an applicable margin.

Alternative currency borrowings under the amended credit facility can be in Canadian Dollars, Euros, Pounds Sterling and any other currency that is freely transferable and convertible to U.S. Dollars. Alternative currency borrowings denominated in Canadian Dollars shall be comprised of Canadian Dealer Offered Rate (“CDOR”) Loans or Canadian Prime Loans, at our option, and bear interest at the CDOR rate plus applicable margin or the applicable Canadian Prime Rate plus an applicable margin, respectively. Alternative currency borrowings denominated in Euros shall be comprised of Euro Interbank Offered Rate (“EURIBOR”) loans and bear interest at the EURIBOR rate plus an applicable margin. Alternative currency borrowings denominated in any other alternative currency shall be comprised of Eurocurrency loans and bear interest at the LIBOR rate plus an applicable margin.

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LIBOR, EURIBOR, and CDOR applicable margins vary from 1.75% to 3.25%, and ABR and Canadian Prime applicable margins vary from 0.75% to 2.25%.

The credit facility includes various covenants and restrictions, certain of which relate to the payment of dividends or other distributions to stockholders; redemption of capital stock; incurrence of additional indebtedness; mortgaging, pledging or disposition of major assets; and maintenance of specified financial ratios. As of December 31, 2017, we were in compliance with all financial covenants and other provisions of our debt agreements.

On March 8, 2018, we entered into a five-year $75,000 syndicated credit agreement (“credit facility”) which replaced in its entirety our prior syndicated credit facility entered into on February 23, 2015. Please refer to Note 11 "Subsequent Events" for a discussion of the new credit facility.

Line of Credit with German Bank

We maintain a line of credit with a German bank for our NobelClad and DynaEnergetics operations in Europe. This line of credit provides a borrowing capacity of 4,000 Euros and is also used to issue bank guarantees to its customers to secure advance payments made by them. As of December 31, 2017, we had no outstanding borrowings under this line of credit and bank guarantees of $1,549 secured by the line of credit. The line of credit bears interest at a EURIBOR-based variable rate which at December 31, 2017 was 3.33%. The line of credit has open-ended terms and can be canceled by the bank at any time.

Debt Issuance Costs

Included in lines of credit are deferred debt issuance costs of $266 and $518 as of December 31, 2017 and 2016, respectively. On March 6, 2017, we amended the credit facility, and we wrote off $261 of previously deferred debt issuance costs, continued capitalization of $229 of deferred debt issuance costs related to the credit agreement prior to amendment, and incurred $138 of additional costs. Remaining deferred debt issuance costs are being amortized over the remaining term of the amended and restated credit agreement which expires on February 23, 2020.

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4. STOCK OWNERSHIP AND BENEFIT PLANS

Our stock-based compensation expense results from restricted stock awards (RSAs), restricted stock units (RSUs), performance share units (PSUs), and stock issued under the Employee Stock Purchase Plan. The following table sets forth the total stock-based compensation expense included in the Consolidated Statements of Operations:

	2017	2016	2015
Cost of products sold	$282	$235	$243
General and administrative expenses	2,337	1,755	2,240
Selling and distribution expenses	356	336	343
Restructuring expense	—	74	536
Stock-based compensation expense before income taxes	2,975	2,400	3,362
Income tax benefit	—	—	(915)
Stock-based compensation expense, net of income taxes	2,975	2,400	2,447
Earnings per share impact			
Basic	$0.21	$0.17	$0.18
Diluted	$0.21	$0.17	$0.18

On November 4, 2016, our stockholders approved the 2016 Omnibus Incentive Plan (“2016 Plan”). The 2016 Plan provides for the grant of various types of equity-based incentives, including stock options, restricted stock awards, restricted stock units, stock appreciation rights, performance shares, performance units, other stock-based awards, and cash-based awards. Our stockholders approved a total of 5,000,000 shares available for grant under the 2016 Plan, less the number of awards outstanding under the 2006 Stock Incentive Plan ("2006 Plan") on September 21, 2016, which was the expiration date of the 2006 Plan. As of September 21, 2016, we had granted an aggregate of 1,639,881 shares of restricted stock awards and restricted stock units under the 2006 Plan, leaving 3,360,119 shares available for grant under the 2016 Plan. As of December 31, 2017, we have granted an aggregate of 379,095 shares of restricted stock awards and restricted stock units under the 2016 Plan, and 2,981,524 shares are available for future grant.

Historically, RSAs and RSUs have been granted to employees and non-employee directors based on time-vesting and/or performance conditions. For currently outstanding RSAs or RSUs with time-vesting only, vesting occurs in one-third increments on the first, second, and third anniversary of the grant date. For currently outstanding RSAs or RSUs with time and performance conditions, one-quarter of the shares vest on each of the first and second anniversaries of the grant date. On the third anniversary, all or a portion of the remaining one-half of the shares will vest based on a formula that takes into account the Company’s achievement of Adjusted EBITDA compared to a target amount and the relative total return to the Company’s stockholders in comparison to the total stockholder return of the Company’s peer group of public companies. Each RSA represents a restricted share that has voting rights, the right to receive dividends, and becomes fully unrestricted upon vesting. Each RSU represents the right to receive one share of the Company's stock upon vesting.

The fair value of RSAs and RSUs granted to employees and non-employee directors is based on the fair value of DMC’s stock on the grant date. RSAs and RSUs granted to employees and non-employee directors are amortized to compensation expense over the vesting period on a straight-line basis. Our policy is to recognize forfeitures of RSAs and RSUs as they occur.

Performance share units (PSUs) are granted to employees with vesting based on performance and market conditions. Each PSU represents the right to receive one share of the Company’s stock, contingent on the achievement of two separate, equally-weighted performance conditions - the achievement of a targeted Adjusted EBITDA goal and total shareholder return (TSR) performance relative to a disclosed peer group. A target number of PSUs is awarded on the

grant date, and the recipient is eligible to earn shares of common stock between 0% and 200% of the number of targeted PSUs awarded, and the PSUs earned, if any, cliff vest at the end of the third year following the year of grant based on the degree of satisfaction of the PSU performance and market conditions.

The fair value of PSUs with target Adjusted EBITDA performance conditions is based on the fair value of DMC's stock on the grant date, and the value is amortized to compensation expense over the vesting period based on the relative satisfaction of the performance condition to date. The fair value of PSUs with TSR performance conditions is based on a third-party valuation simulating a range of possible TSR outcomes over the performance period, and the value is amortized to

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compensation expense over the vesting period based on a straight-line basis. Our policy is to recognize forfeitures of PSUs as they occur.

A summary of the activity of our nonvested shares of RSAs issued under the 2016 Plan for the year ended December 31, 2017 is as follows:

	Shares	Weighted Average Grant Date Fair Value
Balance at December 31, 2016	—	$ —
Granted	260,095	15.27
Vested	(4,027)	13.05
Forfeited	—	—
Balance at December 31, 2017	256,068	$ 15.31

A summary of the activity of our nonvested shares of RSAs issued under the 2006 Plan for the years ended December 31, 2017, 2016, and 2015 is as follows:

	Shares	Weighted Average Grant Date Fair Value
Balance at December 31, 2014	262,720	$ 19.55
Granted	148,972	14.65
Vested	(157,673)	18.81
Forfeited	(12,332)	18.82
Balance at December 31, 2015	241,687	$ 19.55
Granted	228,532	8.07
Vested	(144,008)	15.08
Forfeited	(42,634)	10.82
Balance at December 31, 2016	283,577	$ 11.74
Granted	—	—
Vested	(130,547)	12.41
Forfeited	—	—
Balance at December 31, 2017	153,030	$ 11.74

A summary of the activity of our nonvested RSUs issued under the 2016 Plan for the year ended December 31, 2017 is as follows:

	Shares	Weighted Average Grant Date Fair Value
Balance at December 31, 2016	—	$ —
Granted	73,000	15.62
Vested	—	—
Forfeited	(500)	15.60

Balance at December 31, 2017	72,500	$ 15.62

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A summary of the activity of our nonvested RSUs issued under the 2006 Plan for the years ended December 31, 2017, 2016, and 2015 is as follows:

	Share Units	Weighted Average Grant Date Fair Value
Balance at December 31, 2014	84,566	$ 18.33
Granted	50,167	13.90
Vested	(38,405)	17.58
Forfeited	(9,166)	14.23
Balance at December 31, 2015	87,162	$ 18.33
Granted	48,855	6.88
Vested	(40,836)	16.24
Forfeited	—	—
Balance at December 31, 2016	95,181	$ 16.54
Granted	—	—
Vested	(36,450)	13.30
Forfeited	(333)	6.22
Balance at December 31, 2017	58,398	$ 11.71

A summary of the activity of our nonvested PSUs issued under the 2016 Plan for the year ended December 31, 2017 is as follows:

	Shares	Weighted Average Grant Date Fair Value
Balance at December 31, 2016	—	$ —
Granted	23,000	18.18
Vested	—	—
Forfeited	—	—
Balance at December 31, 2017	23,000	$ 18.18

As of December 31, 2017, total unrecognized stock-based compensation related to unvested awards was as follows:

	Unrecognized stock compensation	Weighted-average recognition period
Unvested RSAs	$ 3,493	2.2 years
Unvested RSUs	1,281	2.0 years
Unvested PSUs	428	2.0 years

Employee Stock Purchase Plan

We have an Employee Stock Purchase Plan (“ESPP”) which is authorized to issue up to 850,000 shares of which 259,465 shares remain available for future purchase. The offerings begin on the first day following each previous offering (“Offering Date”) and end six months from the Offering Date (“Purchase Date”). The ESPP provides that full time employees may authorize DMC to withhold up to 15% of their earnings, subject to certain limitations, to be used

to purchase common stock of DMC at the lesser of 85% of the fair market value of DMC's common stock on the Offering Date or the Purchase Date. In connection with the ESPP, 26,519, 45,888, and 33,346 shares of our stock were purchased during the years ended

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December 31, 2017, 2016, and 2015, respectively. Our total stock-based compensation expense for 2017, 2016, and 2015 includes $92, $54, and $89 respectively, in compensation expense associated with the ESPP.

401(k) Plan

We offer a contributory 401(k) plan to our employees. We make matching contributions equal to 100% of each employee's contribution up to 3% of qualified compensation and 50% of the next 2% of qualified compensation contributed by each employee. Total DMC contributions were $511, $455, and $526 for the years ended December 31, 2017, 2016 and 2015, respectively.

Defined Benefit Plans

We have defined benefit pension plans at certain foreign subsidiaries for which we have recorded an unfunded pension obligation of $1,374 and $1,197 as of December 31, 2017 and 2016, respectively, which is included in other long-term liabilities in the Consolidated Balance Sheets. All necessary adjustments to the obligation are based upon actuarial calculations and are recorded directly to the Consolidated Statements of Operations. We recognized net adjustments of $10, $235 and $(16) for the years ended December 31, 2017, 2016 and 2015, respectively.

5. INCOME TAXES

The domestic and foreign components of income (loss) before taxes for our operations for the years ended December 31, 2017, 2016 and 2015 are summarized below:

	2017	2016	2015
Domestic	$(5,942)	$(4,346)	$(16,167)
Foreign	(9,342)	(1,362)	(9,922)
Total loss before income taxes	$(15,284)	$(5,708)	$(26,089)

The components of the provision (benefit) for income taxes for the years ended December 31, 2017, 2016 and 2015 are as follows:

	2017	2016	2015
Current - Federal	$946	$(888)	$(3,005)
Current - State	91	55	55
Current - Foreign	3,088	1,914	1,557
Current income tax expense (benefit)	4,125	1,081	(1,393)
Deferred - Federal	(393)	—	1,149
Deferred - State	(5)	—	217
Deferred - Foreign	(158)	(284)	(2,091)
Deferred income tax benefit	(556)	(284)	(725)
Income tax provision (benefit)	$3,569	$797	$(2,118)

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Our deferred tax assets and liabilities at December 31, 2017 and 2016 consist of the following:

	2017	2016
Deferred tax assets:		
Net operating loss carryforward	$10,144	$9,764
Inventory differences	570	1,222
Equity compensation	591	688
Investment in subsidiaries	3,514	581
Restructuring	1,389	2,328
Purchased goodwill	3,331	—
Accrued employee compensation and benefits	979	841
Other, net	144	423
Gross deferred tax assets	20,662	15,847
Less valuation allowances	(18,063)	(11,679)
Total deferred tax assets	2,599	4,168
Deferred tax liabilities:		
Purchased intangible assets and goodwill	(2,644)	(4,013)
Depreciation and amortization	(267)	(1,130)
Other, net	(163)	(473)
Total deferred tax liabilities	(3,074)	(5,616)
Net deferred tax liabilities	$(475)	$(1,448)

As of December 31, 2017, we had loss carryforwards for tax purposes totaling approximately $76,063, comprised of $56,873 foreign and $19,190 domestic federal and state loss carryforwards, which will be available to offset future taxable income due to laws in certain foreign jurisdictions. If not used, the foreign tax loss carryforwards generally may be carried forward indefinitely or have at least a ten-year carryforward period. We have analyzed the foreign net operating losses and placed valuation allowances on those where we have determined the realization is not more likely than not to occur.

We assess the available positive and negative evidence to estimate if sufficient future taxable income will be generated to use existing deferred tax assets. Additionally, a three-year cumulative loss at a Consolidated Financial Statement level may be viewed as negative evidence impacting a jurisdiction that by itself is not in a three-year cumulative loss position. At December 31, 2017 and 2016, the Company is in a consolidated three-year cumulative loss position. Accordingly, we have evaluated the impact on all jurisdictions and have recorded a valuation allowance against the corresponding net deferred tax assets as of December 31, 2017 and 2016. The amount of the deferred tax assets considered realizable, however, could be adjusted in future periods if positive evidence such as current and expected future taxable income outweighs negative evidence.

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A reconciliation of our income tax provision computed by applying the Federal statutory income tax rate of 35% to income before taxes is as follows:

	2017	2016	2015
Statutory U.S. federal income tax	$(5,350)	$(1,998)	$(9,131)
U.S. state income tax, net of federal benefit	27	(158)	(340)
U.S. TCJA - net impact	4,435	—	—
Foreign rate differential	(1,728)	164	692
Tax audit adjustments	426	—	—
Equity compensation	(52)	339	224
Deemed repatriation of foreign earnings	—	—	810
Change in State Rate	278	—	—
Impairment of goodwill	239	—	498
Other	(94)	97	(1,513)
Change in valuation allowances	5,388	2,353	6,642
Provision for income taxes	$3,569	$797	$(2,118)

The Tax Cuts and Jobs Act ("TCJA") was enacted in December 2017. Among other things, the TCJA reduces the U.S. federal corporate tax rate from 35% to 21% beginning in 2018, requires companies to pay a one-time transition tax on previously unremitted earnings of non-U.S. subsidiaries that were previously tax deferred, and creates new taxes on certain foreign sourced earnings. The SEC staff issued Staff Accounting Bulletin (SAB) 118, which provides guidance on accounting for enactment effects of the TCJA. SAB 118 provides a measurement period of up to one year from the TCJA’s enactment date for companies to complete their accounting under ASC 740. In accordance with SAB 118, to the extent that a company’s accounting for certain income tax effects of the TCJA is incomplete but it is able to determine a reasonable estimate, it must record a provisional estimate in its financial statements. If a company cannot determine a provisional estimate to be included in its financial statements, it should continue to apply ASC 740 on the basis of the provisions of the tax laws that were in effect immediately before the enactment of the TCJA.

In connection with our initial analysis of the impact of the enactment of the TCJA, the Company recorded net tax expense of $946 in the fourth quarter of 2017. For various reasons that are discussed more fully below, including the issuance of additional technical and interpretive guidance, we have not completed accounting for the income tax effects of certain elements of the TCJA. However, we were able to make reasonable estimates of the TCJA’s effects and, as such, recorded provisional amounts related to the transition tax and the remeasurement of deferred tax assets and liabilities.

The transition tax is a tax on previously untaxed accumulated and current earnings and profits (E&P) of certain of the Company’s non-U.S. subsidiaries. To determine the amount of the transition tax, we must determine, in addition to other factors, the amount of post-1986 E&P of the relevant subsidiaries, as well as the amount of non-U.S. income taxes paid on such earnings. E&P is similar to retained earnings of the subsidiary, but requires other adjustments to conform to U.S. tax rules. Further, the transition tax is based in part on the amount of those earnings held in cash and other specified assets. We were able to make a reasonable estimate of the transition tax and recorded a provisional obligation and additional income tax expense of $946 in the fourth quarter of 2017, which the Company expects to elect to pay over eight years. As of December 31, 2017, we reflected $75 and $871 in current accrued income taxes and other long term liabilities, respectively. However, the Company is continuing to gather additional information and will consider additional technical guidance to more precisely compute and account for the amount of the transition tax in the measurement period. This amount may change when we finalize the calculation of post-1986 foreign E&P previously deferred from U.S. federal taxation, finalize the calculation of non-U.S. income taxes paid on such earnings, and finalize our determination on the impact of the deemed repatriation of foreign earnings on 2017 taxable income.

In addition to the transition tax, the TCJA introduced a territorial tax system, which will be effective beginning in 2018. The territorial tax system may impact the Company's overall global capital and legal entity structure, working capital, and repatriation plan on a go-forward basis. In light of the territorial tax system, and other new international provisions within the TCJA that are effective beginning in 2018, the Company is currently analyzing its global capital and legal entity structure, working capital requirements, and repatriation plans. We have not completed our full analysis with respect to the impact of the TCJA on our indefinite reinvestment assertion, and we are not yet able to make reasonable estimates of its related effects. Therefore, no provisional adjustments relative to the territorial tax system and our indefinite reinvestment assertion were

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recorded. Further, it is impracticable for the Company to estimate any future tax costs for any unrecognized deferred tax liabilities associated with its indefinite reinvestment assertion as of December 31, 2017, because the actual tax liability, if any, would be dependent on complex analysis and calculations considering various tax laws, exchange rates, circumstances existing when a repatriation, sale, or liquidation occurs, or other factors. If there are any changes to our indefinite reinvestment assertion as a result of finalizing our assessment of the TCJA, the Company will adjust its provisional estimates, record, and disclose any tax impacts in the appropriate period, pursuant to SAB 118.

We remeasured certain deferred tax assets and liabilities based on the rates at which they are expected to reverse in the future, which is generally 21% under the TCJA. As our U.S. deferred tax assets are fully offset by a valuation allowance, there was no net additional tax impact related to deferred tax assets and liabilities recognized in the fourth quarter of 2017. We are still analyzing certain aspects of the TCJA, considering additional technical guidance, and refining our calculations, which could potentially affect the measurement of these balances or potentially give rise to new deferred tax amounts. This includes, but is not limited to, the impacts of changes to Code Section 162(m) on our deferred tax assets related to compensation, and the potential impacts of the global intangible low-taxed income ("GILTI") provision within the TCJA on deferred tax assets and liabilities.

We have not completed our full analysis with respect to the GILTI provision within the TCJA, and we are not yet able to make reasonable estimates of its related effects. Therefore, no provisional adjustments relative to GILTI were recorded. Currently, we have not yet elected a policy as to whether we will recognize deferred taxes for basis differences expected to reverse as GILTI or whether we will account for GILTI as period costs if and when incurred. The Company is currently evaluating other elements of the TCJA for which the Company was not yet able to make reasonable estimates of the enactment impact and for which it would continue accounting for them in accordance with ASC 740 on the basis of the tax laws in effect before the TCJA.

DMC files income tax returns in the U.S. federal jurisdiction, as well as various U.S. state and foreign jurisdictions. In the U.S., tax audits for the years 2012 through 2015 were closed during the second quarter of 2017, and no adjustments to the Company's tax provisions were proposed. In the spring of 2016, German tax authorities commenced an examination of the tax returns of our German tax authorities for the 2011 through 2014 tax years. During 2017, German tax authorities proposed and we agreed to a settlement. The key provisions of the settlement resulted in increases to income related to various issues related to transfer pricing. We recorded an additional $251 in income tax expense and $41 of interest to reflect these adjustments and the impact of these adjustments on 2015 and 2016 taxes.

Most of DMC's state tax returns remain open to examination for the tax years 2013 through 2017. DMC's foreign tax returns generally remain open to examination for the tax years 2013 through 2017, depending on jurisdiction.

At December 31, 2017 and 2016, the balance of unrecognized tax benefits was zero. We recognize interest and penalties related to uncertain tax positions in operating expense. As of December 31, 2017 and 2016, our accrual for interest and penalties related to uncertain tax positions was zero.

6. BUSINESS SEGMENTS

Our business is organized in the following two segments: NobelClad and DynaEnergetics. NobelClad is a global leader in the production of explosion-welded clad metal plates for use in the construction of corrosion resistant industrial processing equipment and specialized transition joints. DynaEnergetics designs, manufactures and distributes products utilized by the global oil and gas industry principally for the perforation of oil and gas wells.

The accounting policies of both segments are the same as those described in the summary of significant accounting policies. Our reportable segments are separately managed strategic business units that offer different products and

services. Each segment’s products are marketed to different customer types and require different manufacturing processes and technologies.

Segment information is presented for the years ended December 31, 2017, 2016, and 2015 as follows:

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	Year Ended December 31,		
	2017	2016	2015
Net sales:			
NobelClad	$71,550	$91,285	$89,980
DynaEnergetics	121,253	67,290	76,938
Consolidated net sales	$192,803	$158,575	$166,918

	Year Ended December 31,		
	2017	2016	2015
Operating income (loss):			
NobelClad	$(17,360)	$8,878	$5,819
DynaEnergetics	15,470	(5,380)	(19,245)
Segment operating income (loss)	(1,890)	3,498	(13,426)
Unallocated corporate expenses	(7,395)	(6,372)	