UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

WASHINGTON, D.C. 20549

Form 10-K

(Mark One)

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

For the fiscal year ended December 31, 2019

☐ **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.)

11800 Ridge Parkway, Suite 300, Broomfield, Colorado 80021
(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	Trading Symbol	Name of each exchange on which registered
Common Stock, $.05 Par Value	BOOM	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 ☐ No ☒

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☐ No ☒

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

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

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

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

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

The approximate aggregate market value of the voting stock held by non-affiliates of the registrant was $637,943,369 as of June 30, 2019.

The number of shares of Common Stock outstanding was 14,652,675 as of February 21, 2020.

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 2020 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, 2019.

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PART I

ITEM 1. Business

References made in this Annual Report on Form 10-K to “we”, “our”, “us”, “DMC”, "DMC Global" 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. (“DMC”, "we", "us", "our", or the "Company") is a diversified holding company. Today, DMC’s portfolio consists of DynaEnergetics and NobelClad, which collectively address the energy, industrial processing and transportation markets. DynaEnergetics designs, manufactures and distributes products utilized by the global oil and gas industry principally for the perforation of oil and gas wells. 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. Both DynaEnergetics and NobelClad operate globally through an international network of manufacturing, distribution and sales facilities. 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. DMC’s objective is to identify well-run businesses and strong management teams and support them with long-term capital and strategic, legal, technology and operating resources. Our approach helps our portfolio companies grow core businesses, launch new initiatives, upgrade technologies and systems to support their long-term strategy, and make acquisitions that improve their competitive positions and expand their markets. DMC’s culture is to foster local innovation versus centralized control and to stand behind our businesses in ways that truly add value.

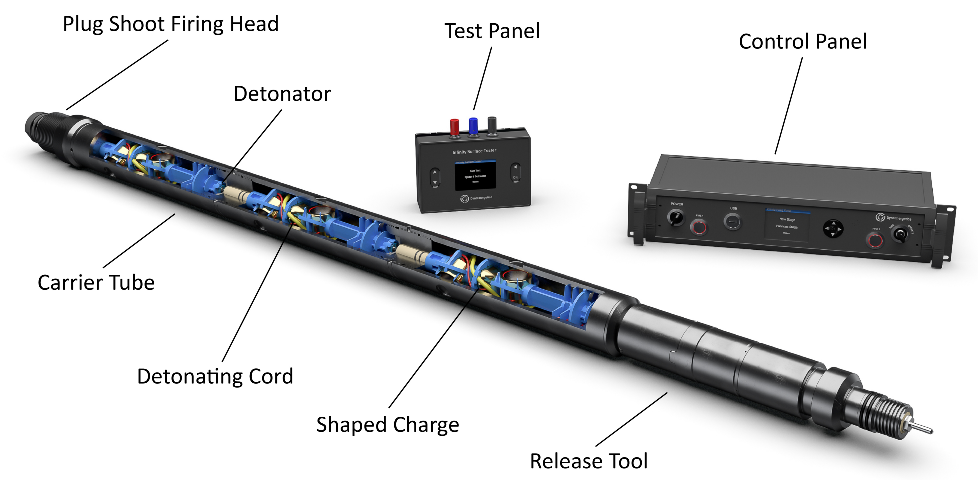
Business Segments

DynaEnergetics

DynaEnergetics designs, manufactures, markets and sells perforating systems and associated hardware for the global oil and gas industry. During the well drilling process, steel casing is inserted into the well and cemented in place to isolate and support the integrity of the wellbore. A perforating system, which contains a series of specialized explosive shaped charges, is used to punch holes through the casing and cement liner of the well and into the geologic formation surrounding the well bore. The channels created by the shaped charges allow hydrocarbons to flow back into the well bore. When hydraulic fracturing is employed, the perforations and channels also provide a path for the fracturing fluid to enter and return from the formation.

In unconventional wells, multiple perforating systems, which generally range from 7 inches to three feet in length, are connected end-to-end into a perforating “string.” The string is lowered into the well and then pumped by fluid across the horizontal lateral to the target location within the shale formation. When the perforating system is initiated via an electronic or digital signal from the surface, the shaped charges detonate.

DynaEnergetics designs, manufactures and sells all five primary components of a perforating system. These components are: 1. the initiation system, 2. shaped charges, 3. detonating cord, 4. gun hardware, and 5. a control panel.



In North America's well-completion industry, perforating components traditionally have been assembled by highly trained personnel at the well site or nearby assembly facility. In 2015, DynaEnergetics began assembling its perforating systems in a controlled environment at its manufacturing facilities. The systems, marketed as DynaStage® (DS) Factory-assembled, Performance-assured™ perforating systems, are shipped directly to the customers' well-site or remote shop.

Perforating systems such as those manufactured by DynaEnergetics are essential to oil and gas recovery. DynaEnergetics' systems are sold to oilfield service companies around the world. DynaEnergetics also promotes its technologies and systems directly to end-user exploration and production ("E&P") companies.

The level of market activity for perforating products generally corresponds to the level of oil and gas exploration and production activity. Advancements in well designs have 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, 2019, 2018 and 2017, the DynaEnergetics segment represented approximately 78%, 73% and 63% of our consolidated net sales, respectively.

DynaEnergetics has a long and successful history of designing and producing components such as initiators, detonating cord, bi-directional boosters, shaped charges and hardware systems used in perforating systems in oil and gas, and to a lesser extent, for seismic exploration. DynaEnergetics has significantly increased its research and development investments in recent years and is focused on further development of innovative perforating products and systems.

DynaEnergetics has been particularly focused on the advancement of safe and selective perforating products for use in North America's growing shale, or onshore, unconventional, oil and gas industry. Among these products are the IS2™ Intrinsically Safe Initiating Systems, which include the IS2TM Customer Assembled (CA) detonator and the wire-free IS2 Top Fire (TF) detonator. The IS2 TF detonator is the key enabling technology in DynaEnergetics' family of Factory-Assembled, Performance-AssuredTM DynaStageTM (DS) perforating systems. The IS2 detonators require a specific digital 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 well sites with multiple wellbores, improving operating efficiencies for customers.

Our fully integrated detonators incorporate advanced software controls and are significantly smaller than a traditional detonator and switch assembly. The IS2 CA detonator reduces by 40% the number of electrical wire connections required within each perforating gun versus traditional selective initiation systems. This reduces set-up times and significantly increases reliability.

Our DS Infinity factory-assembled perforating systems combine all of our advanced technologies into a preassembled perforating gun that can be armed at the well site with our push-in IS2 TF detonator. The IS2 TF detonator is completely wire-free, and eliminates the customary process of wiring the detonator into the perforating system at the well site. All DS systems are operated using our in-house designed Infinity™ Control Panel. The Infinity Panel is highly intuitive and allows the gun string to be safely tested and monitored throughout the pump-down operation. The system also incorporates a shot detection function resulting in significant time and cost savings. Recent design advancements to the IS2 line of initiation products enable customers to safely and reliably fire up to 100 systems and set a plug in a single run. All DS systems can be tested before going down hole using our Infinity Surface Tester, reducing the risk of lost time, mishaps, misruns and misfires due to a system fault.

During 2019, DynaEnergetics added two new DS models - DS Trinity™ and DS NLine™ - to the original DS Infinity system. DS Trinity is an ultra-compact perforating system that features three explosive shaped charges on a single radial plane. The 7-inch, unibody design eliminates the use of detonating cord and a connecting “sub.” DS NLine features several shaped charges on a lateral plane, and enables the user to align the charges at the well surface and then orient the perforating string so it fires in the desired direction once it is in the well bore.

Our DynaSlot™ plug and abandonment (PA) perforating system is designed for plug and abandonment operations. During well 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 PA perforating system facilitates this process by creating access to a full 360-degree area between the rock formations and the tubing and/or casing. Customers use the unique helical perforation pattern created by DynaSlot DA 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, the FracTune™ line of shaped charges, 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. Our most recent advancements in shaped charge design have enabled our DS Trinity system.

DynaEnergetics Tubing Conveyed Perforating ("TCP") systems are customized for individual customer needs and well applications. TCP enables perforating of conventional vertical wells, as well as highly deviated and horizontal wells. These types of wells are increasingly being drilled by the off-shore industry and in applications outside the U.S. 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 and the United States. In 2019, DynaEnergetics added two additional automated IS2 detonator lines for a total of four lines at its facility in Troisdorf, Germany. In the fourth quarter of 2018, DynaEnergetics completed construction of 74,000-square feet of new manufacturing, assembly and administrative space on its existing site in Blum, Texas, which substantially increased DynaEnergetics' component manufacturing and DS assembly capacity. In 2019, the business commissioned an additional shaped charge manufacturing line at its Blum facility, where there are now three shaped charge lines. These investments expanded our global capacity for shaped charge and perforating gun production and improved our delivery and customer service capabilities in our key markets.

The capacity added by DynaEnergetics throughout 2018 and 2019 in Germany and the U.S. improved our operating efficiencies and enabled us to more effectively serve our global customer base. Capitalizing on our more efficient manufacturing footprint, DynaEnergetics ceased its operations in Tyumen, Siberia in September 2019. During the third and fourth quarters of 2019, the Company released substantially all of its employees inside Russia, sold inventories and certain fixed assets, and proceeded to wind-down the operation.

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 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 perforating systems for their own use but also buy systems and other perforating components and specialty products from independent suppliers such as DynaEnergetics. We compete for sales primarily on customer service, product quality, reliability, safety, performance, price and, in North America, our ability to provide customers with a factory-assembled, performance-assured perforating system, versus a series of components that must be assembled at a well site or nearby staging facility.

Customer Profile

DynaEnergetics' perforating and seismic products are purchased by international and U.S. 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 wellbore 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 international and North America-based service companies (often referred to as “wireline” 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 and Houston, Texas. DynaEnergetics’ sales strategy focuses on direct selling, distribution through licensed distributors and independent sales representatives, education of current and prospective service-company customers about our products and technologies, and education of E&P companies about the benefits of our products and technologies in an effort to generate pull-through demand. Currently, DynaEnergetics sells its oilfield and seismic products through wholly owned affiliates in Germany, the U.S., and Canada, and through independent sales agents in other parts of the world. DynaEnergetics serves the Americas region through its network of sales and distribution 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 devotes 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 has a purpose-built pressure vessel which can reach 30,000 psi test pressures and be heated to 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 that 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 $7,057, $5,932, and $4,335 for the years ended December 31, 2019, 2018 and 2017, respectively.

NobelClad

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.

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 roll bonding 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 or other favorable quality 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 roll bonding 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 to a broad range of metals, including aluminum, titanium, zirconium, nickel alloys and stainless steels.

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 2019. 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, pipelines, heat exchangers and other related equipment. Increased oil and gas production from deep, hot, and more corrosive fields also has 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. In addition, 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 zinc, 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 tube sheets. The largest clad tube sheets 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 tube sheets are the low-cost solution for power plant condensers.

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 tube sheets. Applications range from refrigeration chillers on fishing boats to massive air conditioning units for skyscrapers, airports, and deep underground mines.

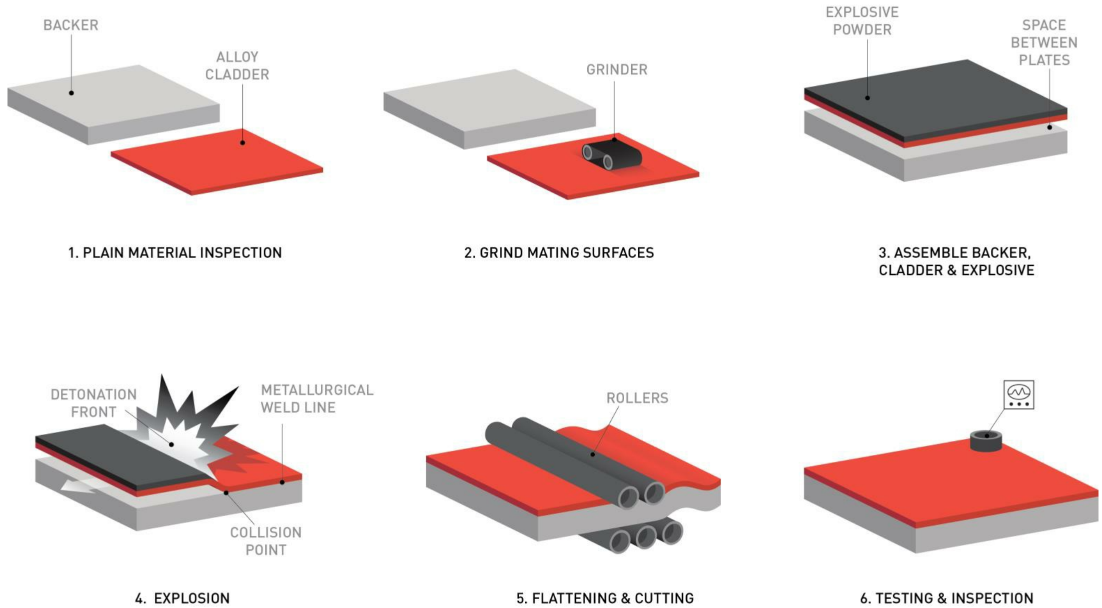
Operations

The NobelClad segment seeks to build on its leadership position in its markets. During the three years ended December 31, 2019, 2018 and 2017, the NobelClad segment represented approximately 22%, 27% and 37% of our consolidated net sales, respectively. Our manufacturing plants and their respective shooting sites in Pennsylvania and Germany provide the production capacity to address projects for NobelClad's global customer base.

In December 2017, DMC approved a plan to consolidate NobelClad's European production facilities and it completed the process in the fourth quarter of 2018. During the second quarter of 2019, NobelClad completed the sale of its production facility and related assets in France. NobelClad's state-of-the-art manufacturing center in Liebenscheid, Germany, purchased in November 2014, now performs all of NobelClad's European explosion cladding, although the business maintains its sales and administrative office in France.

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 conformity with product specifications.

EXPLOSION-WELDING PROCESS



NobelClad has 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 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, and we believe that this allows us to achieve higher quality and lower cost.

Competition

Metal Cladding. NobelClad faces competition from two primary alternative cladding technologies: hot roll bonding 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 against these technologies. Roll bond is only produced by a few steel mills in the world. In this process, the clad metal and base metal are 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 intermetallic compounds, hot roll bond is limited to joining similar metals, such as stainless steel and nickel alloys to steel. Roll bond's niche is production of large quantities of light to medium gauge clad plates. Roll bond 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 is used by the many vessel fabricators that are often also NobelClad customers. 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 roll bond, 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 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 Asia. Its sales offices in Europe cover the full European continent, Africa, the Middle East, India, Asia, and Russia. NobelClad also has sales offices in South Korea, Singapore 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, customer service and compliance 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 relationships 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 and Germany. 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 its other production site, prioritizing timing. The two production sites allow NobelClad to meet customer production needs in a timely manner.

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.

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.

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 Europe”). Early in its history, NobelClad Europe was a licensee of the Detaclad technology. The acquisition of NobelClad Europe 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 Europe 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 and also serves as a production resource for DynaEnergetics.

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.

In 2018, NobelClad completed the consolidation of its European explosion-welding operations into its manufacturing facility in Liebenscheid, Germany. DynaEnergetics expanded its North American operations, adding 74,000 square feet of manufacturing, assembly and administrative space on its Blum, Texas campus.

In 2019, DynaEnergetics completed a series of capacity expansion initiatives at its manufacturing facilities in North America and Germany. Capitalizing on its more efficient manufacturing footprint, DynaEnergetics ceased its operations in Tyumen, Siberia. Additionally in 2019, the Company internally restructured its European entities and simplified its legal structure. The new structure took effect on January 1, 2020, and reduces the number of legal entities, minimizes complexity and enables the Company to reduce its annual compliance and administration costs and manage global tax reform more effectively.

Employees

As of December 31, 2019, we had 741 permanent and part-time employees (500 U.S. and 241 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

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, initiating systems and electronics.

We hold a variety of intellectual property through our NobelClad business, including but not limited to patent applications, 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.

No single patent or trademark is considered to be critical to either DynaEnergetics' or NobelClad's businesses.

We are careful in protecting our proprietary know-how and manufacturing expertise in both DynaEnergetics and NobelClad, and we have implemented measures and procedures designed 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, 2019	2018	2017
United States	$ 309,826	$ 221,847	$ 116,083
Canada	17,688	30,126	23,377
United Arab Emirates	6,614	4,093	1,768
Norway	5,003	990	1,771
Germany	4,900	4,067	5,397
Ukraine	3,824	3,594	1,307
France	3,643	4,581	3,032
Egypt	3,366	2,419	2,721
Oman	3,197	2,112	4,132
South Korea	2,964	2,263	1,173
Russia	2,942	4,117	4,504
Belgium	2,365	3,386	1,628
Netherlands	2,181	2,427	3,088
Australia	2,151	873	1,010
Sweden	2,016	2,339	2,009
Indonesia	1,934	1,201	409
India	1,831	4,291	2,927
Bahrain	1,820	1,065	45
Spain	1,706	1,083	1,126
Rest of the world	17,579	29,555	15,296
Net sales	$ 397,550	$ 326,429	$ 192,803

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”). 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

Please carefully consider the following discussion of significant factors, events, and uncertainties that make our business and an investment in our securities subject to risk. The events and consequences discussed in these risk factors could, in circumstances we may or may not be able to accurately predict, recognize, or control, have a material adverse effect on our business, growth, reputation, prospects, financial condition, operating results (including components of our financial results), cash flows, liquidity, and stock price. These risk factors do not identify all risks that we face; our operations could also be affected by factors, events, or uncertainties that are not presently known to us or that we currently do not consider to present significant risks to our operations. In addition, the global economic climate amplifies many of these risks.

Risk Factors Related to DynaEnergetics

Demand for DynaEnergetics’ products is substantially dependent on the levels of expenditures by the oil and gas industry. Decreases or expected decreases in oil and gas prices and reduced expenditures in the oil and gas industry could have a material 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. In the fourth quarter of 2019, there was a steep decline in North American completion activity and lower expenditures by the oil and gas industry, and E&P companies are under increasing pressure from investors to reduce their cost of operations. If these trends continue or result in a more marked downturn, we would expect continued reduced or delayed oil and gas exploration and production spending, project modifications, delays or cancellations, general business disruptions, and delays in payment of, or nonpayment of, amounts that are owed to us, all of which could result in reduced demand for our products, downward pressure on selling prices for our products and decreased revenues and profits. 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, business and regulatory 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.

Failure to adjust our manufacturing and supply chain to accurately meet customers demand could have a material adverse effect on 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 may 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.

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

Expansions, including the transfer of operations to other facilities or the construction of new manufacturing facilities such as the recently completed Blum expansion, include the risk of additional costs and start-up inefficiencies. If we are unable to effectively manage our expansion projects or related anticipated net sales are not realized, our operating results could be materially adversely affected. Risks of future expansions include:

- 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;
- increased debt levels and borrowing costs;
- strain placed on our operational, financial and other systems and resources; and
- inability to locate sufficient employees or management talent to support the expansion.

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 and enhanced product offerings. 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.

DynaEnergetics' operations include the licensing, storage and handling of explosive materials. Despite our use of specialized facilities to store and handle dangerous materials and our employee training programs, the storage and handling of explosive materials could result in explosive incidents that temporarily shut down or otherwise disrupt our or our customers' operations or could cause restrictions, delays or cancellations in the delivery of our services. It is possible that such an explosion could result in death or significant injuries to employees and other persons. Material property damage to us, our customers and third parties arising from an explosion or resulting fire could also occur. Any explosion could expose us to adverse publicity and liability for damages or cause production restrictions, delays or cancellations, any of which could have a material adverse effect on our operating results, financial condition and cash flows. Moreover, failure to comply with applicable requirements or the occurrence of an explosive incident may also result in the loss of our license to store and handle explosives, which would have a material adverse effect on our business, results of operations and financial conditions.

Consolidation of our customers and competitors may impact our results of operations.

The oil and gas industry has experienced periods of consolidation in the past. Industry consolidation may result in reduced capital spending by some of our customers, the acquisition of one or more of our primary customers or competitors or consolidated entities using size and purchasing power to seek pricing or other concessions, which may lead to decreased demand for our products and services. In addition, recent, ongoing and future mergers, combinations and consolidations in our industry could result in existing competitors increasing their market share and may result in stronger competitors. As a result, industry consolidation may have a significant negative impact on our results of operations, financial position or cash flows.

We may not be able to continue to compete successfully against other companies in our industry.

The markets in which we operate are highly competitive. DynaEnergetics competes with a broad spectrum of companies that produce and market perforating services and products. Many of these companies are large national and multi-national companies, including the oil and natural gas industry's largest oilfield service providers. These companies have longer operating histories, greater financial, technical, and other resources, and greater name recognition than we do. In addition, we compete with many smaller companies capable of competing effectively on a regional or local basis. Our competitors may be able to respond more quickly to new or emerging technologies and changes in customer requirements. To remain competitive, DynaEnergetics must continue to provide innovative products and maintain an excellent reputation for value, quality, on-time delivery, and safety. If we fail to compete successfully against our competition, we may be unable to maintain acceptable sales levels, prices and margins for our products, which could have a material adverse effect on our business, financial condition, and results of operations.

Risk Factors Related to NobelClad

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.

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 $31.7 million, $29.9 million, and $37.5 million at the end of fiscal years 2019, 2018 and 2017, 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 in Pennsylvania and in Dillenburg, Germany are located in mines. Access to our Dillenburg mine is subject to a lease that expires in 2022, and if we are unable to negotiate a suitable extension of the lease, this could impact our operations. 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 Pennsylvania shooting site is subleased under an arrangement pursuant to which we provide certain contractual services to the sub-landlord. The efforts to identify alternative 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 existing or 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 on a worldwide basis with explosion-welded clad products made by other manufacturers in the clad metal business and with products manufactured using other technologies. We see competition from one large well-known clad supplier and from a growing number of smaller companies with explosion welded clad manufacturing capability in China and India. Explosion-welded clad products also compete with products manufactured by roll bond 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 and at different metal prices. 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.

We do not maintain a reserve fund for warranty or defective products claims. Our costs could substantially increase if we experience a large claim or a significant number of warranty claims.

Our product warranties against technical defects of our clad products vary depending on our purchase orders with customers. The warranties require us to repair or replace defective products and may require the payment of a certain percentage of the purchase price as liquidated damages for our failure to meet the specified product specifications and delivery requirements. In addition, our clad products are often used as part of larger projects or are used in potentially hazardous applications that can cause injury or loss of life and damage to property or equipment. In the event of a product defect, we may be named as a defendant in product liability or other lawsuits asserting potentially large claims. We cannot guarantee that insurance will be available or adequate to cover any or all liabilities incurred. We have not established any reserve funds for potential warranty claims since historically we have experienced few warranty claims for our products so that the costs associated with our warranty claims have been low. If we experience an increase in warranty claims or if our repair and replacement costs associated with warranty claims increase significantly, it could have a material adverse effect on our financial condition and results of operations.

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. These include precautions which must be taken to protect employees from exposure to sound and ground vibration, falling debris associated with the detonation of explosives, and emissions resulting from 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.

NobelClad's customers use some of its products in potentially hazardous applications that can cause injury or loss of life and damage to property or equipment. We cannot be certain that our products will be completely free from defects, and we could be named as a defendant in product liability or other lawsuits asserting potentially large claims if an accident involving our product occurs, whether or not any defect in our products exists. In addition, we cannot guarantee that insurance will be available or adequate to cover any or all liabilities incurred.

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 usually 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. Additionally, any errors or changes as to specifications or significant changes in pricing or availability of materials may cause cost overruns and delays in completion of projects. If we fail to meet delivery schedules, we may be required to pay damages or may risk loss of an order, which could have a material adverse effect on our business, financial condition and results of operations.

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, Canadian dollars, or other foreign currencies. Sales made in currencies other than U.S. dollars accounted for 12%, 21%, and 28% of total sales for the years ended2019, 2018 and 2017, 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 Europe'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. We use 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, and the euro to the U.S. Dollar. Since the underlying balance sheet account balances being hedged can fluctuate significantly throughout our monthly hedge periods, our hedging program cannot fully protect against foreign currency fluctuations.

Disruptions or delays involving our suppliers or increases in prices for the components, raw materials and parts that we obtain from our suppliers could have a material adverse effect on our business and consolidated results of operations.

Our operations are dependent upon the continued ability of our suppliers to deliver the components, raw materials and parts that we need to manufacture our products. In some instances, we purchase components, raw materials and parts that are ultimately derived from a single source and may be at an increased risk for supply disruptions. Any number of factors, including labor disruptions, military activity, catastrophic weather events, the occurrence of a contagious disease or illness,(such as the coronavirus), contractual or other disputes, unfavorable economic or industry conditions, delivery delays or other performance problems or financial difficulties or solvency problems, could disrupt our suppliers' operations and lead to uncertainty in our supply chain or cause supply disruptions for us, which could, in turn, disrupt our operations. In particular, if the current coronavirus outbreak continues and results in a prolonged period of travel, commercial and other similar restrictions, we could experience global supply disruptions. If we experience supply disruptions, we may not be able to develop alternate sourcing quickly. Any disruption of our production schedule caused by an unexpected shortage of components, raw materials or parts even for a relatively short period of time could cause us to alter production schedules or suspend production entirely, which would adversely affect our business and results of operations.

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, 2019, we had an outstanding balance of approximately $14.9 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, 2019, 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 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. The downturn in the U.S. economy in fiscal 2010 and the continued low metals prices since that time have had an adverse effect on the U.S. steel industry and on our NobelClad business, and any future economic downturn or a prolonged period of stagnation in the economy could have a material adverse effect on our business, financial condition, and results of operations.

Tariffs imposed by the U.S. government and related counter tariffs have increased our costs, limited the availability of metals and may lead to further trade conflicts.

In 2018, the U.S. announced tariffs of 25 percent on steel and 10 percent on aluminum imported from countries where we typically source metals. These tariffs were met with retaliatory tariffs from certain countries and increased, broader tariffs were levied by the U.S. on targeted countries, including China. The tariffs impacted the cost of the importation of steel, which we utilize in our steel plate and steel pipe, key materials in our NobelClad and DynaEnergetics businesses. Though in many cases we have been able to source metals from domestic suppliers, some materials are only available from sources subject to tariffs. The cost of domestic steel and aluminum has also increased, along with the price of delivery, and the availability of certain materials has been limited. These increased costs have increased the price of our products to our customers and, in some instances, our ability to be competitive. For our NobelClad business, this impacts our ability to compete on international projects and negatively impacts U.S. fabricators, which are strong consumers of NobelClad products. Although some of these tariffs have been subsequently reduced or eliminated, as occurred in connection with the North American Free Trade Agreement (NAFTA) with Canada and Mexico and with NAFTA's proposed replacement, the United States Mexico Canada Agreement (USMCA), many tariffs continue to exist and new tariffs have been and may be imposed at any time. The prolonged duration of tariffs, the imposition of additional tariffs and the risk of potential broader global trade conflicts 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, 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 the risk that our customers will delay payment of or fail 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 and rising interest rates. 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, and Canada, 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). 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 for natural resource damages, cleanup costs, and other damages under environmental, health and safety laws could result in restrictions or prohibitions on our facilities, substantial civil or criminal liabilities and could have a material adverse effect on our business, consolidated results of operations, and consolidated financial condition” and above under “The use of explosives subjects us to additional regulation, and any accidents or injuries could subject us to significant liabilities.”

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. Changes in these laws and regulations or in related banking compliance programs and practices can cause delays in shipments or require us to cancel orders or restrict our ability to receive payments on certain orders. 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.

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 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. For example, in November 2018, voters in Colorado defeated a "setback" initiative, Proposition 112. Proposition 112 would have amended the Oil and Gas Conservation Act and prohibited the Colorado Oil and Gas Conservation Commission from permitting new oil and gas development closer than 2,500 feet from occupied structures or other areas such as playgrounds, parks, public open space and certain bodies of water. If Proposition 112 had passed, it would have significantly impacted the oil and gas industry in Colorado. Since Proposition 112's defeat, new oil and gas legislation has been adopted (Colorado SB-181) by the state legislature which could significantly impact new projects in Colorado and multiple additional ballot initiatives similar to Proposition 112 are being threatened. 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.

Our operations are subject to political and economic instability and risk of government actions thatcould 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, conversion, or repatriation 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 extraction of shale gas or oil using hydraulic fracturing;
  - limit or disrupt markets or our operations, restrict payments, or limit the movement of funds;
  - result in increased tariffs;
  - impose trade and economic sanctions or other restrictions;
  - increase borrowing costs;
  - result in the deprivation of contract rights; and
  - result in the inability to obtain or retain licenses required for operation.

Liabilities for natural resource damages, cleanup costs, and other damages under environmental, health and safety laws could result in restrictions or prohibitions on our facilities, substantial civil or criminal liabilities and could have a material adverse effect on our business, consolidated results of operations, and consolidated financial condition.

We are subject to extensive environmental, health and safety regulation in the United States and the other countries where our manufacturing facilities are located including those covering hazardous materials. We and all of our activities in the United States are subject 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. The Dillenburg, Germany facility is operated based on a specific permit granted by the local mountain authority and must be renewed every three years. Any failure to comply with current and future environmental and safety regulations could subject us to significant liabilities. 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. 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, which could have a material adverse effect on our business, operating results and financial condition.

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 in a manner that is adverse to us.

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 prevention 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 Cuts and Jobs Act ("TCJA"), 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 TCJA will affect the tax position reflected on our Consolidated Balance Sheets and our obligations for cash taxes of our U.S. entities and has had 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 through 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 to 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.

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. 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 material litigation is brought against us in the future, a decision adverse to DMC could have a material adverse effect on our financial position or prospects. For a more detailed discussion of pending litigation, seeNote 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 could materially and adversely affect our competitive position. In addition, 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, and this could have a similar effect on our competitive position.

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

Tools, techniques, methodologies, technology, programs and components we use to provide our services may infringe, or be alleged to 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 generally result in significant legal and other costs and may distract management from running our core businesses 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 cause 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 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, theft, 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, and 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 contains numerous requirements that must be complied with when handling the personal data of E.U.-based data subjects. We are subject to the GDPR with respect to our E.U. operations and employees. The GDPR and similar 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 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. In addition, the states of California and Colorado have recently enacted data privacy laws, and such laws may be enacted in other states or at the U.S. federal level.

The GDPR, any resultant changes in E.U. member states' national laws and regulations, and existing or new U.S. state or federal data privacy 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 and 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 penalties for noncompliance can be imposed 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 and 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.

For example, our due diligence process may not reveal all liabilities associated with a potential acquisition, and this could result in us incurring unanticipated losses after the acquisition is completed. 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.

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 or 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, including volatility in foreign exchange rates, tariffs and stock, commodity, credit or asset valuations, and federal government actions or shutdowns.

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.

ITEM 1B. Unresolved Staff Comments

None.

ITEM 2. Properties

Corporate Headquarters

Our corporate headquarters currently are located in Broomfield, Colorado. The office is also used for NobelClad's U.S. administrative offices.

Location	Property Type	Property Size	Owned/Leased	Expiration Date of Lease (if applicable)
Broomfield, Colorado	Corporate and Sales Office	18,284 sq. ft.	Leased	September 1, 2029

DynaEnergetics

DynaEnergetics leases a manufacturing site and sales office in Troisdorf, Germany. The leases for these properties expire on December 31, 2020, but we have options to renew the lease which would then extend through December 31, 2025. 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.

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

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 option for 5 years
Troisdorf, Germany	Office, Sieglarer Strasse	9,203 sq. ft.	Leased	February 29, 2020 with yearly renewal options
Liebenscheid, Germany	Manufacturing and office	91, 493 sq. ft.	Owned	
Liebenscheid, Germany	Land	77,672 sq. ft.	Owned	
Houston, Texas	Office	4,572 sq. ft.	Leased	April 30, 2023
Blum, Texas	Office, warehouse, and manufacturing	83,000 sq. ft.	Owned	
Blum, Texas (a)	Warehouse	10,000 sq. ft.	Owned	
Blum, Texas	Land for office, warehouse, and manufacturing	284 acres	Owned	
Whitney, Texas	Office, warehouse, and manufacturing	36,000 sq. ft.	Owned	

(a) The Blum, Texas warehouse is separate from the main Blum manufacturing campus.

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, 2025, but we have options to renew the lease which would then extend through December 15, 2029. The license and risk allocation agreements will expire on March 31, 2023.

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 leases the building housing its sales and administrative office in Perpignan, France.

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, 2025, with renewal options through December 15, 2029
Cool Spring, Pennsylvania	Clad plate shooting site	1,200,000 sq. ft.	Leased	March 31, 2023, with renewal options through December 31, 2028
Tautavel, France (c)	Clad shooting site	109 acres	Owned	
Dillenburg, Germany	Clad plate shooting site	11.4 acres	Owned	
		31,345 sq. ft.	Leased	August 31, 2021
Würgendorf, Germany (c)	Manufacturing	Land: 24.6 acres	Owned	
		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	

(a) Prior to January 10, 2020, the Mt. Braddock, Pennsylvania location was also used as a manufacturing and distribution center for our DynaEnergetics business segment. Beginning on January 10, 2020, it was used as solely a distribution center for our DynaEnergetics business segment
(b) Though NobelClad is no longer performing manufacturing activities in France, it owns this land in order to have access to a redundant shooting site.

(c) In connection with the purchase of the manufacturing facility in Liebenscheid, Germany, NobelClad ceased use of the manufacturing facility it owns in Würgendorf, Germany in the first quarter of 2015.

ITEM 3. Legal Proceedings

Please see Note 8 to the Consolidated Financial Statements.

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, 2019, 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.

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." As of February 21, 2020, there were 222 holders of record of our common stock (does not include beneficial holders of shares held in "street name").

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.

Issuer Purchases of Equity Securities

In connection with the vesting of Company restricted common stock under our equity incentive plans during the third quarter of 2019, we retained shares of common stock in satisfaction of withholding tax obligations. These shares are held as treasury shares by the Company.

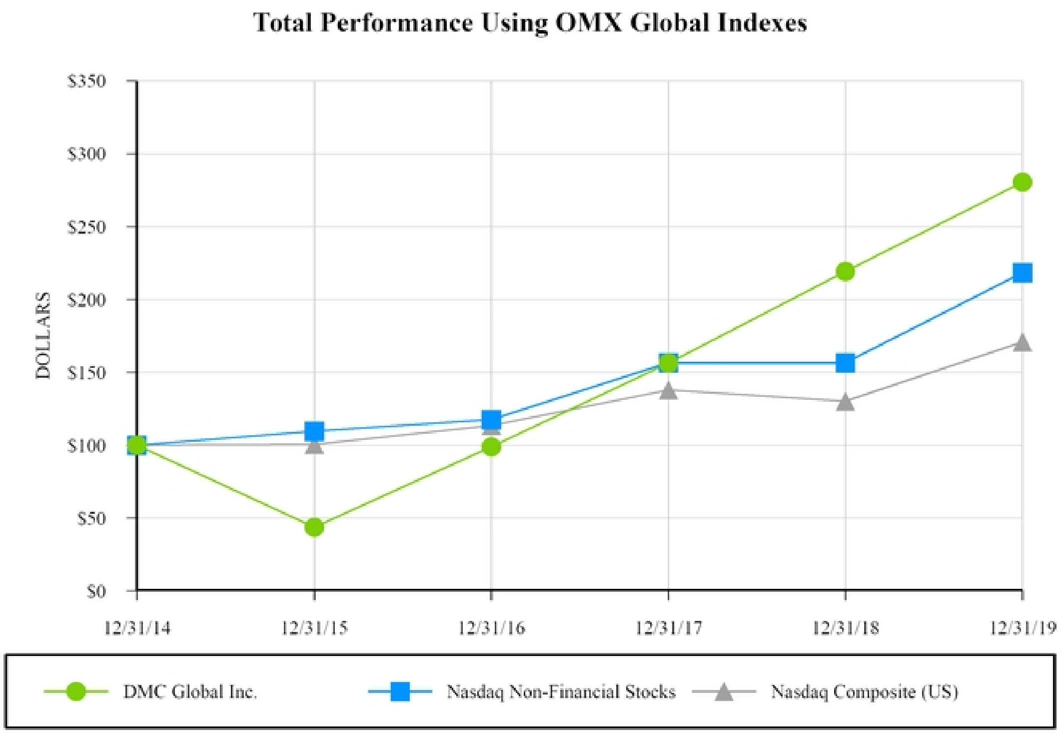
	Total number of shares purchased (1) (2)	Average price paid per share
January 1 to March 31, 2019	15,784	$ 45.02
April 1 to June 30, 2019	76,129	$ 73.71
July 1 to September 30, 2019	2,511	$ 49.38
October 1 to December 31, 2019	199	$ 45.50
Total	94,623	$ 68.22

(1) Share purchases in 2019 were to offset tax withholding obligations that occur upon the vesting of restricted common stock under the terms of the 2016 Equity Incentive Plan.

(2) As of December 31, 2019, the maximum number of shares that may yet be purchased would not exceed the employees' portion of taxes withheld on unvested shares (442,179).

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, 2014, 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	12/31/14	12/31/15	12/31/16	12/31/17	12/31/18	12/31/19
DMC Global Inc.	$100.00	$43.63	$98.94	$156.37	$219.23	$280.52
Nasdaq Non-Financial Stocks	$100.00	$109.75	$117.73	$156.58	$156.63	$218.44
Nasdaq Composite (U.S.)	$100.00	$100.48	$113.55	$137.83	$130.33	$170.96

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."

	(Dollars in Thousands, Except Per Share Data)				
	Year Ended December 31,				
Statement of Operations	2019	2018	2017	2016	2015
Net sales	$ 397,550	$ 326,429	$ 192,803	$ 158,575	$ 166,918
Gross profit	144,923	110,695	59,391	38,680	35,624
Costs and expenses	66,995	64,157	49,784	42,752	43,776
Restructuring expenses	19,503	1,114	4,283	1,202	4,063
Anti-dumping duty penalty	—	8,000	—	—	—
Goodwill impairment	—	—	17,584	—	11,464
Operating income (loss)	58,425	37,424	(12,260)	(5,274)	(23,679)
Other expense, net	(1,723)	(2,817)	(3,024)	(434)	(2,410)
Income (loss) before income taxes	56,702	34,607	(15,284)	(5,708)	(26,089)
Income tax provision (benefit)	22,661	4,134	3,569	797	(2,118)
Net income (loss)	$ 34,041	$ 30,473	$ (18,853)	$ (6,505)	$ (23,971)
Net income (loss) per share:					
Basic	$ 2.29	$ 2.05	$ (1.31)	$ (0.46)	$ (1.72)
Diluted	$ 2.28	$ 2.04	$ (1.31)	$ (0.46)	$ (1.72)
Dividends Declared per Common Share	$ 0.29	$ 0.08	$ 0.08	$ 0.08	$ 0.14
Financial Position					
Total assets	$ 277,421	$ 240,418	$ 173,083	$ 162,555	$ 182,192
Long-term debt, including current portion	$ 14,272	$ 41,355	$ 17,984	$ 15,732	$ 26,826

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. A discussion regarding our financial condition and results of operations as well as our liquidity and capital resources for fiscal 2018 compared to fiscal 2017 can be found under Item 7 in our Annual Report on Form 10-K for the fiscal year ended December 31, 2018, which is available on the SEC's website at www.sec.gov and our Investor Relations website at www.dmcglobal.com/investors.

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 Global Inc. ("DMC", "we", "us", "our", or the "Company") is a diversified holding company. Our innovative businesses provide differentiated products and services to niche industrial and commercial markets around the world. DMC's objective is to identify well-run businesses and strong management teams and support them with long-term capital and strategic, legal, technology and operating resources. Our approach helps our portfolio companies grow core businesses, launch new initiatives, upgrade technologies and systems to support their long-term strategy, and make acquisitions that improve their competitive positions and expand their markets. DMC's culture is to foster local innovation versus centralized control and to stand behind our businesses in ways that truly add value. Today, DMC's portfolio consists of DynaEnergetics and NobelClad, which collectively address the energy, industrial processing and transportation markets. Based in Broomfield, Colorado, DMC trades on Nasdaq under the symbol "BOOM."

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, 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. Well completion operations are increasingly complex, which in turn has increased the demand for intrinsically-safe, reliable and technically advanced perforating systems.

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.

During the third quarter of 2019, DynaEnergetics announced that sales of its DynaStage™ (DS) systems had exceeded one million units. We believe the milestone was the result of a widespread transition by operators and service companies to our Factory-Assembled, Performance-Assured™ perforating systems. In 2019, more than 20 percent of the perforating systems deployed in North America were either DS systems, or were enabled by DynaEnergetics' IS2™ intrinsically safe initiating systems.

Additionally, DynaEnergetics continued to expand its product and technology portfolio during 2019. During the year, it introduced its DS Trinity™ system, a compact product that features three charges on a single radial plane, and DS™ NLine™ system, which enables the user to align the charges at surface and then orient the gun in the wellbore. In addition, DynaEnergetics was awarded 17 new patents and filed 126 patent applications in the U.S. and internationally. It was the most active year ever for patent applications and awards at DynaEnergetics, which currently holds a total of 63 patents and 186 pending patent applications, covering a total of 73 patent families.

North American well completion activity began slowing in the third quarter of 2019, and the decline accelerated rapidly in the fourth quarter. DynaEnergetics capitalized on the fourth-quarter slowdown by accelerating a planned streamlining of its global manufacturing and distribution footprint. This process involved exiting a manufacturing plant in Tyumen, Siberia, and closing distribution facilities in Canada and Oklahoma. DynaEnergetics also accelerated the planned consolidation of its Mt. Braddock, Pennsylvania, assembly operations into its flagship manufacturing facility in Blum, Texas.

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 $31,660 at December 31, 2019 from $29,879 at December 31, 2018.

Cost of products sold for NobelClad includes the cost of metals, explosive powders and other raw materials used to manufacture clad metal plates as well as employee compensation and benefits, depreciation of manufacturing facilities and equipment, manufacturing supplies and other manufacturing overhead expenses.

NobelClad is experiencing consistent demand from the downstream energy sector and also is bidding on a number of international upstream energy sector projects. During 2019, NobelClad’s market development team established new applications for its composite metal plates. New customers in the aerospace, power generation and engineered wood products sectors have turned to NobelClad’s capabilities to address complex corrosion and temperature resistance issues.

Factors Affecting Results

The following items impacted the comparability of the company's results for the years endedDecember 31, 2019 and 2018:

- DynaEnergetics' sales of $310,424 in 2019 increased 31% compared with 2018 due to higher well perforating activity in the U.S. shale, or onshore unconventional, oil and gas market and an increase in market demand for its intrinsically safe initiating systems (IS2™) and its family of DynaStage™ (DS) Factory-Assembled, Performance-Assured™ perforating systems. Sales volumes declined in the second half of 2019 compared to the first half of 2019 principally due to a sharp slowdown in well completion activity within North America’s onshore, unconventional oil and gas industry.
- NobelClad’s sales of $87,126 in 2019 decreased 2% compared with 2018 primarily due to the impact of changes in exchange rates on Euro-denominated sales.
- Consolidated gross profit of 36% in 2019 increased from 34% in 2018 due to a higher proportion of net sales in DynaEnergetics relative to NobelClad, the benefit of manufacturing efficiencies in DynaEnergetics, improved project mix in NobelClad and the favorable impact of higher sales volume on fixed manufacturing overhead expenses.
- Restructuring expenses of $19,503 in 2019 related to cumulative foreign currency translation losses, asset impairments, and severance liabilities in connection with the closure and substantial liquidation of DynaEnergetics' operations in Tyumen, Siberia. We also incurred severance, equipment moving expenses and contract termination costs, partially offset by a gain on assets sold in connection with the prior year closure of NobelClad’s manufacturing operations in France.
- Consolidated selling, general, and administrative expenses were $65,451 in 2019 compared with $61,213 in 2018. The increase primarily was due to headcount additions and merit raises, higher stock-based compensation, and increased costs for outside services, including expenses related to an enterprise resource planning ("ERP") upgrade in DynaEnergetics as well as development and improvement of sales-related software.
- Net cash of $6,081 (comprised of $20,353 in cash net of $14,272 of total debt) was an improvement from$27,980 of net debt at December 31,2018. Net cash, a non-GAAP measure, is calculated as cash and cash equivalents less total debt.

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 cash or net debt is a non-GAAP measure we use to supplement information in our Consolidated Financial Statements. We define net debt as total debt less cash and cash equivalents and net cash as cash and cash equivalents less total debt. 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 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 meaning of 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 expressions, as well as statements in the future tense, identify forward-looking statements. Such statements include statements regarding our future expected financial position and operating results, our growth and business strategy, our expectations regarding the oil and gas industry, expected product developments in DynaEnergetics, planned capital expenditures in 2020, our financing plans, our future liquidity position and factors impacting such position.

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 materials;
- 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 impacts of trade and economic sanctions or other restrictions imposed by the European Union, the United States or other countries;
- Costs and risks associated with compliance with the United States Foreign Corrupt Practices Act ("FCPA") and similar legislation;
- The availability and cost of funds; and
- Fluctuations in foreign currencies.

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.

Consolidated Results of Operations

	2019	2018	$ change	% change
Net sales	$ 397,550	$ 326,429	$ 71,121	22 %
Gross profit	144,923	110,695	34,228	31 %
Gross profit percentage	36.5 %	33.9 %		
COSTS AND EXPENSES:				
General and administrative expenses	37,976	38,452	(476)	(1)%
% of net sales	9.6 %	11.8 %		
Selling and distribution expenses	27,475	22,761	4,714	21 %
% of net sales	6.9 %	7.0 %		
Amortization of purchased intangible assets	1,544	2,944	(1,400)	(48)%
% of net sales	0.4 %	0.9 %		
Restructuring expenses	19,503	1,114	18,389	1,651 %
Anti-dumping duty penalties	—	8,000	(8,000)	(100)%
Operating income	58,425	37,424	21,001	56 %
Other expense, net	(169)	(1,202)	1,033	86 %
Interest expense, net	(1,554)	(1,615)	61	4 %
Income tax provision	22,661	4,134	18,527	448 %
Net income	34,041	30,473	3,568	12 %
Adjusted EBITDA	$ 93,753	$ 59,638	$ 34,115	57 %

Net sales increased $71,121 compared with 2018 primarily due to higher sales in DynaEnergetics from increased perforating activity in U.S. land-based oil and gas well completions and growth in customer demand for its advanced perforating systems. The net sales increase in DynaEnergetics was partially offset by lower net sales in NobelClad primarily due to the impact of changes in exchange rates on Euro-denominated sales.

Gross profit percentage increased to 36.5% primarily due to a higher proportion of net sales in DynaEnergetics relative to NobelClad, the benefit of manufacturing efficiencies in DynaEnergetics, improved project mix in NobelClad and the favorable impact of higher sales volume on fixed manufacturing overhead expenses.

General and administrative expenses decreased $476 compared with 2018 principally due to lower legal costs of $3,200 resulting from the successful defense of patent infringement lawsuits in DynaEnergetics in 2018 and a decrease in variable incentive compensation of $431. The decreases were partially offset by non-capitalizable training and data conversion expenses related to an ERP upgrade in DynaEnergetics of $1,775 and an increase in stock-based compensation expense of $1,190.

Selling and distribution expenses increased $4,714 compared with 2018 primarily due to costs associated with the implementation of sales-related software of $1,269, increases in salaries and wages of $839 due to merit raises and headcount additions, variable sales commissions of $341, and an increase in bad debt expense of $374 to record reserves for uncollectible accounts receivable in DynaEnergetics. In addition, DynaEnergetics distribution expenses increased to support the growth in sales activity.

Amortization of purchased intangible assets decreased $1,400 compared with 2018 primarily due to fully amortizing certain customer relationship intangibles during 2019.

Restructuring expenses of $19,503 in 2019 primarily related to reclassification of the cumulative foreign currency translation losses to the Statement of Operations, asset impairments, and severance liabilities in connection with the closure and substantial liquidation of DynaEnergetics' operations in Tyumen, Siberia. Additionally, we incurred severance, equipment moving expenses and contract termination costs, partially offset by a gain on assets sold, in connection with the prior year closure of NobelClad's manufacturing operations in France. Expenses in 2018 related to equipment moving expenses, legal fees and severance costs associated with the closure.

Anti-dumping duty penalties of $8,000 recorded in 2018 by the DynaEnergetics segment represent an accrual for penalties related to the anti-dumping and countervailing duties (“AD/CVD”) matter asserted by U.S. Customs. This amount was paid during the second quarter of 2019.

Operating income increased $21,001 compared with 2018 primarily due to improved earnings in DynaEnergetics and NobelClad in 2019 and the anti-dumping duty penalty accrual that was recorded in 2018, which was partially offset by current year restructuring expenses and asset impairments.

Other expense, net of $169 in 2019 primarily related to the non-service cost components of the annual adjustment to our defined benefit pension plans at certain foreign subsidiaries, which was partially offset by a net foreign currency exchange gain. In 2018, other expense, net was driven by unrealized and realized foreign currency exchange losses. Foreign currency exchange gains and losses can arise when subsidiaries enter into inter-company and third-party transactions that are denominated in currencies other than their functional currency, including foreign currency forward contracts used to offset foreign exchange rate fluctuations on certain foreign currency denominated asset and liability positions.

Interest expense, net of $1,554 decreased compared with last year due to a lower average outstanding debt balance in 2019 compared with 2018 and a $159 write-off of deferred debt issuance costs in the first quarter of 2018. The decrease was partially offset by lower interest capitalization in 2019 compared with 2018 following the completion of DynaEnergetics’ construction of a new manufacturing, assembly and administrative space in 2018.

Income tax provision of $22,661 for 2019 compared with an income tax provision of$4,134 for 2018. The current-year effective tax rate was unfavorably impacted by nondeductible losses related to the closure of DynaEnergetics’ operations in Tyumen, Siberia. Additionally, the current-year effective tax rate reflects an unfavorable increase due to the establishment of a valuation allowance against certain deferred tax assets in Germany that we do not expect to be realizable due to a change in our German legal entity structure that is effective on January 1, 2020.

The 2018 income tax provision included a benefit of $604 related to Staff Accounting Bulletin (SAB) 118 measurement period adjustment to the provisional amount that was recorded in 2017 for the transition tax under the Tax Cuts and Jobs Act ("TCJA"). Additionally, the 2018 effective tax rate was favorably impacted by changes in the valuation allowance of $8,860, which included a benefit of $5,818 related to the release of valuation allowances in certain jurisdictions and the remainder due to movements in the underlying deferred tax assets due to current year income or losses. As of each reporting date, the Company considers new evidence, both positive and negative, that could impact its view with regard to future realization of deferred tax assets. As of December 31, 2018, in part because the Company was no longer in a consolidated three-year cumulative loss position, we determined that sufficient positive evidence exists to conclude that it is more likely than not that these deferred tax assets are realizable, and we therefore reduced the valuation allowance accordingly.

Net income in 2019 was $34,041, or $2.28 per diluted share, compared with a net income of $30,473, or $2.04 per diluted share in 2018.

Adjusted EBITDA increased compared with 2018 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.

	2019	2018
Net income	$ 34,041	$ 30,473
Interest expense, net	1,554	1,615
Provision for income taxes	22,661	4,134
Depreciation	8,316	6,576
Amortization of purchased intangible assets	1,544	2,944
EBITDA	68,116	45,742
Restructuring expenses, net and asset impairments	19,503	1,114
Restructuring related inventory write down	630	—
Restructuring related accounts receivable write off	131	—
Anti-dumping duty penalties	—	8,000
Stock-based compensation	5,204	3,580
Other expense, net	169	1,202
Adjusted EBITDA	$ 93,753	$ 59,638

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 is defined as revenues less expenses identifiable to the segment. DMC operating income 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 before income taxes by deducting unallocated corporate expenses, including stock-based compensation, net other expense, net interest expense, and income tax provision.

Net sales, segment operating income, and Adjusted EBITDA for each segment were as follows for years ended December 31:

	2019		
	DynaEnergetics	NobelClad	DMC Global Inc.
Net Sales	$ 310,424	$ 87,126	$ 397,550
% of Consolidated	78 %	22 %	
Operating income	68,781	7,193	58,425
Adjusted EBITDA	94,541	11,118	93,753

	2018		
	DynaEnergetics	NobelClad	DMC Global Inc.
Net Sales	$ 237,448	$ 88,981	$ 326,429
% of Consolidated	73 %	27 %	
Operating income	44,476	6,499	37,424
Adjusted EBITDA	58,784	10,825	59,638

DynaEnergetics

	2019	2018	$ change	% change
Net sales	$ 310,424	$ 237,448	$ 72,976	31 %
Gross profit	122,703	90,623	32,080	35 %
Gross profit percentage	39.5 %	38.2 %		
COSTS AND EXPENSES:				
General and administrative expenses	16,876	21,097	(4,221)	(20 %)
Selling and distribution expenses	17,260	14,509	2,751	19 %
Amortization of purchased intangible assets	1,162	2,541	(1,379)	(54)%
Restructuring expenses, net and asset impairments	18,624	—	18,624	N/M
Anti-dumping duty penalties	—	8,000	(8,000)	(100)%
Operating income	68,781	44,476	24,305	55 %
Adjusted EBITDA	$ 94,541	$ 58,784	$ 35,757	61 %

Net sales were $72,976 higher than in 2018 primarily due to higher levels of perforating activity in U.S. well completions in the unconventional onshore oil and gas sector and growth in customer demand for DynaEnergetics' advanced perforating systems.

Gross profit percentage increased to 39.5% due to favorable product mix, the benefit of manufacturing efficiencies, and the impact of higher sales on fixed manufacturing overhead expenses. Gross profit percentage in 2019 was negatively impacted by a $630 inventory write down associated with the shutdown of DynaEnergetics' operations in Tyumen, Siberia.

General and administrative expenses decreased by $4,221 compared with 2018 primarily due to lower legal costs of $3,200 associated with the successful defense of patent infringement lawsuits in 2018, partially offset by non-capitalizable training and data conversion expenses related to an ERP upgrade. DynaEnergetics also had lower payroll-related costs and taxes in 2019.

Selling and distribution expenses increased by $2,751 compared with 2018 primarily due to costs associated with the implementation of sales-related software of $942 and bad debt expense of $374 to record reserves for uncollectible accounts receivable in DynaEnergetics. In addition, distribution expenses increased to support the growth in sales activity.

Amortization of purchased intangibles decreased by $1,379 compared with 2018 primarily due to fully amortizing certain customer relationship intangibles during 2019.

Restructuring expense of $18,624 in 2019 primarily related to the reclassification of cumulative foreign currency translation losses to the Statement of Operations, asset impairments, and severance liabilities in connection with the closure and substantial liquidation of DynaEnergetics' operations in Tyumen, Siberia. In 2019, DynaEnergetics also closed distribution facilities in Canada and Oklahoma and consolidated perforating system assembly operations in Mt. Braddock, Pennsylvania, into its facility in Blum, Texas.

Anti-dumping duty penalties of $8,000 in 2018 represent an accrual for a mitigated amount of penalties on the AD/CVD matter that was asserted by U.S. Customs. This amount was paid during the second quarter of 2019.

Operating income increased by $24,305 compared with 2018 primarily due to higher unit sales volume in 2019 and the non-recurring accrual for penalties on the AD/CVD matter recorded in 2018, partially offset by restructuring expenses and asset impairments as well as increased selling and distribution expenses in 2019.

Adjusted EBITDA increased compared with 2018 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.

	2019	2018
Operating income	$ 68,781	$ 44,476
Adjustments:		
Restructuring expenses, net and asset impairments	18,624	—
Restructuring related inventory write down	630	—
Restructuring related accounts receivable write off	131	—
Anti-dumping duty penalties	—	8,000
Depreciation	5,213	3,767
Amortization of purchased intangible assets	1,162	2,541
Adjusted EBITDA	$ 94,541	$ 58,784

NobelClad

	2019	2018	$ change	% change
Net sales	$ 87,126	$ 88,981	$ (1,855)	-2 %
Gross profit	22,840	20,414	2,426	12 %
Gross profit percentage	26.2 %	22.9 %		
COSTS AND EXPENSES:				
General and administrative expenses	4,703	4,522	181	4 %
Selling and distribution expenses	9,683	7,876	1,807	23 %
Amortization of purchased intangible assets	382	403	(21)	-5 %
Restructuring expenses, net and asset impairments	879	1,114	(235)	-21 %
Operating income	7,193	6,499	694	11 %
Adjusted EBITDA	$ 11,118	$ 10,825	$ 293	3 %

Net sales decreased by $1,855 compared with 2018 principally due to the impact of changes in exchange rates on Euro-denominated sales.

Gross profit percentage increased to 26.2% primarily due to better project mix. 2018 also was unfavorably impacted by several large, lower-margin international projects that shipped in the first quarter of 2018.

General and administrative expenses increased by $181 compared with 2018 primarily due to higher outside service costs of $275 associated with Six Sigma projects and an assessment of ERP upgrade options partially offset by lower payroll-related costs and taxes of $124.

Selling and distribution expenses increased by $1,807 compared with 2018 primarily due to higher salaries and wages from headcount additions of $653, increased outside service costs of $326 related to improvement and development of NobelClad's customer-facing website as well as its internal project quoting tool, increased variable commissions and bonus of $306, and higher payroll related costs and taxes of $154.

Restructuring expense, net and asset impairments of $879 in 2019 primarily related to severance, equipment moving expenses and contract termination costs, partially offset by a gain on the sales of assets, in connection with the prior-year closure of NobelClad’s manufacturing operations in France.

Operating income increased by $694 compared to 2018 primarily due to improved gross profit in 2019 partially offset by increased general and administrative expenses and selling and distribution expenses in 2019.

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.

	2019	2018
Operating income	$ 7,193	$ 6,499
Adjustments:		
Restructuring expenses	879	1,114
Depreciation	2,664	2,809
Amortization of purchased intangible assets	382	403
Adjusted EBITDA	$ 11,118	$ 10,825

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, and 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. Furthermore, any restriction on the availability of borrowings under our credit facilities could negatively affect our ability to meet future cash requirements. We have an effective shelf registration statement on Form S-3 with the Securities and Exchange Commission 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 quarterly dividends aggregating $0.29 per share in 2019 and $0.08 per share in 2018. We 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 was used to assist in financing our DynaEnergetics manufacturing expansion project in Blum, Texas. The Capex Facility allowed for advances to fund capital expenditures of the Blum expansion project during year one of the credit facility. In March 2019, the Capex Facility converted from a revolving loan to a term loan amortizable at 12.5% of principal per year with a balloon payment for the outstanding balance upon the credit facility maturity date in 2023. In 2019, we prepaid an additional $7,000 above the required amortization amount. The credit 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 limit 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 rate, an adjusted Federal Funds rate 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 a $20,000 alternate currency sublimit can be in euros, Canadian dollars, pounds sterling, or 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%).

As of December 31, 2019, U.S. dollar revolving loans of zero and borrowings of $14,875 on the Capital Expenditure facility were outstanding under our credit facility and our available borrowing capacity was $50,000.

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.

The leverage ratio is defined in the credit facility as the ratio of Consolidated Funded Indebtedness (as defined in the agreement) on the last day of any trailing four quarter period to the Consolidated Pro Forma EBITDA for such period. The maximum leverage ratio permitted by our credit facility is 3.0 to 1.0. The actual leverage ratio as of December 31, 2019, calculated in accordance with the 2015 syndicated credit facility, as amended, was 0.2 to 1.0.

The debt service coverage ratio, as defined in the credit facility, means, for any period, the ratio of Consolidated Pro Forma EBITDA less the sum of capital distributions paid in cash, cash income taxes and Consolidated Unfunded Capital Expenditures (as defined in the agreement) to Debt Service Charges (as defined in the agreement). Under our credit facility, the minimum debt service coverage ratio permitted is 1.35 to 1.0. The actual debt service coverage ratio for the trailing twelve months ended December 31, 2019, was 8.7 to 1.0.

As of December 31, 2019, 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.

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, 2019:

	Payment Due by Period As of December 31, 2019				
Other Contractual Obligations	Less than 1 Year	1-3 Years	3-5 Years	More than 5 Years	Total
Credit facility (1)	$ 3,125	$ 11,750	$ —	$ —	$ 14,875
Operating lease obligations (2)	1,716	3,419	2,696	6,866	14,697
Purchase obligations (3)	12,558	—	—	—	12,558
Total	$ 17,399	$ 15,169	$ 2,696	$ 6,866	$ 42,130

(1) Represents outstanding borrowings under our credit facility. For more information about our debt obligations, seeNote 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, 2019. Our operating lease obligations are described in Note 2 "Summary of Significant Accounting Policies" of the Notes to Consolidated Financial Statements.

(3) 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 $64,594 in 2019 compared with $27,638 in 2018. The increase primarily was due to higher net income in 2019 combined with lower cash used for working capital in 2019 compared with 2018.

Cash flows used in investing activities

Net cash used in investing activities in 2019 totaled $25,947 and primarily consisted of acquisition of property, plant and equipment of$19,785 for DynaEnergetics and $5,560 for NobelClad. Net cash used in investing activities in 2018 totaled $45,095 and primarily consisted of acquisition of property, plant and equipment of$41,041 for DynaEnergetics and $2,281 for NobelClad. The decrease in capital expenditures in 2019 versus 2018 principally related to the 2018 expansion of DynaEnergetics' manufacturing, administrative and sales office in Blum, Texas.

Cash flows from financing activities

Net cash used in financing activities for 2019 totaled $30,562, which included net repayments on revolving loans of$17,129, repayments on the Capex Facility of $10,125, treasury stock purchases of$1,103, and payment of quarterly dividends of $2,762.

Net cash provided by financing activities for 2018 totaled $21,858, which included borrowings on the Capex Facility of$25,000 partially offset by net repayments on revolving loans of $1,628 and payment of quarterly dividends of $1,189.

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, 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

On January 1, 2018, the Company adopted a new accounting standard, as amended, regarding revenue from contracts with customers using the modified retrospective approach, which was applied to all contracts with customers. Under the new standard, an entity is required to recognize revenue to depict the transfer of promised goods to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods.

There was no cumulative financial statement effect of initially applying the new revenue standard because an analysis of our contracts supported the recognition of revenue consistent with our historical approach. In accordance with the modified retrospective approach, the comparative information has not been restated and continues to be reported under the accounting standards in effect for those periods. The Company does not expect the adoption of the new revenue standard to have a material impact on the Company's revenues or net income on an ongoing basis.

The Company's revenues are primarily derived from consideration paid by customers for tangible goods. The Company analyzes its different goods by segment to determine the appropriate basis for revenue recognition, as described below. Revenue is not generated from sources other than contracts with customers and revenue is recognized net of any taxes collected from customers, which are subsequently remitted to governmental authorities. There are no material upfront costs for operations that are incurred from contracts with customers. On occasion, NobelClad and DynaEnergetics may require customers to make advance payments prior to the shipment of goods. We record such payments as contract liabilities in our Consolidated Balance Sheets.

Our rights to payments for goods transferred to customers are conditional only on the passage of time and not on any other criteria. Payment terms and conditions vary by contract, although terms generally include a requirement of payment within 30 to 60 days. In instances when we require customers to make advance payments prior to the shipment of their orders, we record a contract liability. We have determined that our contract liabilities do not include a significant financing component given the short duration between order initiation and order fulfillment within each of our segments.

NobelClad

Customers agree to terms and conditions at the time of initiating an order. The significant majority of transactions contain a single performance obligation - the delivery of a clad metal product. In instances where multiple products are included within an order, each product represents a separate performance obligation given that: (1) the customer can benefit from each product on a standalone basis and (2) each product is distinct within the context of the contract.

The transaction price is readily determinable and fixed at the time the transaction is entered into with the customer. NobelClad is entitled to each product's transaction price upon the customer obtaining control of the item. Such control occurs as of a point in time, which is generally based upon relevant International Commercial Terms ("Incoterms") as it relates to product ownership and legal title being transferred. Upon fulfillment of applicable Incoterms, NobelClad has performed its contractual requirements such that it has a present right to payment, and the customer from that point forward bears all risks and rewards of ownership. In addition, at this date, the customer has the ability to direct the use of, or restrict access to, the asset. No payment discounts, rebates, refunds, or any other forms of variable consideration are included within its contracts. NobelClad also does not provide service-type warranties either via written agreement or customary business practice, nor does it allow customer returns.

For contracts that contain only one performance obligation, the total transaction price is allocated to the sole performance obligation. For contracts which contain multiple distinct performance obligations, judgment is required to determine the standalone selling price ("SSP") for each performance obligation. NobelClad uses the expected cost plus margin approach in order to estimate SSP, whereby an entity forecasts its expected costs of satisfying a performance obligation and then adds an appropriate margin for that good. The required judgment described herein largely is mitigated given the short duration between order initiation and complete order fulfillment.

DynaEnergetics

Customers agree to terms and conditions at the time of initiating an order. Transactions contain standard products, which may include perforating system components, such as detonating cord, or systems and associated hardware, including factory-assembled DynaStage® perforating systems and DynaSelect® detonators. In instances where multiple products are included within an order, each product represents a separate performance obligation given that: (1) the customer can benefit from each product on a standalone basis and (2) each product is distinct within the context of the contract.

The transaction price is readily determinable and fixed at the time the transaction is entered into with the customer. DynaEnergetics is entitled to each product's transaction price upon the customer obtaining control of the item. Such control occurs as of a point in time, which is generally based upon relevant Incoterms as it relates to product ownership and legal title being transferred. Upon fulfillment of applicable Incoterms, DynaEnergetics has performed its contractual requirements such that it has a present right to payment, and the customer from that point forward bears all risks and rewards of ownership. In addition, at this date, the customer has the ability to direct the use of, or restrict access to, the asset. No payment discounts, rebates, refunds, or any other forms of variable consideration are included within contracts. DynaEnergetics also does not provide service-type warranties either via written agreement or customary business practice, nor does it allow customer returns without its prior approval.

For orders that contain only one performance obligation, the total transaction price is allocated to the sole performance obligation. For orders that contain multiple products being purchased by the customer, judgment is required to determine SSP for each distinct performance obligation. However, such judgment largely is mitigated given that products purchased are generally shipped at the same time. In instances where products purchased are not shipped at the same time, DynaEnergetics uses the contractually stated price to determine SSP as this price approximates the price of each good as sold separately.

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 adjust inventory to its net realizable value by recording provisions for excess, slow moving and obsolete inventory. To determine provision 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.

Other than the impairment of assets associated with ceasing DynaEnergetics' operations in Tyumen, Siberia, there were no indicators of impairment of finite-lived assets for 2019. There were no indicators of impairment of finite-lived assets for 2018. In association with the 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.

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.

Leases

On January 1, 2019, the Company adopted a new accounting standard, as amended, that requires the Company to record assets and liabilities on the balance sheet for lease-related rights and obligations and to disclose key information about its leasing arrangements. The Company elected the modified retrospective approach upon adoption and elected the package of practical expedients available under the new standard. This new standard establishes a ROU model that requires the Company to recognize ROU assets and lease liabilities on the balance sheet for all leases with a term longer than 12 months at commencement of the lease.

The Company determines if a contract contains a lease arrangement at the inception of the contract. For leases in which the Company is the lessee, leases are classified as either finance or operating. ROU assets are initially measured at the present value of lease payments over the lease term plus initial direct costs, if any, with the classification affecting the pattern of expense recognition. If a lease does not provide a discount rate and the rate cannot be readily determined, an incremental borrowing rate is used to determine the future lease payments. Lease and non-lease components within the Company’s lease agreements are accounted for together. The Company has no material leases in which the Company is the lessor.

Off Balance Sheet Arrangements

At December 31, 2019, 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 12%, 21%, and 28% of total sales for the years ended2019, 2018, and 2017, 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.

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. The notional amount of the foreign exchange contracts at December 31, 2019 and 2018 was $22,860 and $7,008, respectively.

Interest Rate Risk

The company's interest expense, in part, is sensitive to the general level of interest rates in North America and Europe. At December 31, 2019, all of the company's debt was subject to variable interest rates. A one percentage point change in average interest rates would cause interest expense, net in 2019 to increase by $284. This was determined by considering the impact of a hypothetical interest rate on the company's average outstanding variable debt. This analysis does not consider the effect of the level of overall economic activity that could exist. In the event of a change in the level of economic activity, which may adversely impact interest rates, the company could likely take actions to further mitigate any potential negative exposure to the change. However, due to the uncertainty of the specific actions that might be taken and their possible effects, the sensitivity analysis assumes no changes in the company's financial structure.

ITEM 8. Financial Statements and Supplementary Data

DMC GLOBAL INC.
INDEX TO CONSOLIDATED FINANCIAL STATEMENTS

As of December 31, 2019 and 2018 and for Each of the Three Years Ended December 31, 2019, 2018 and 2017

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, 2019 and 2018, 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, 2019, 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, 2019 and 2018, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2019, 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, 2019, 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 February 24, 2020 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
February 24, 2020

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

	As of December 31, 2019	As of December 31, 2018
ASSETS		
Current assets:		
Cash and cash equivalents	$ 20,353	$ 13,375
Accounts receivable, net of allowance for doubtful accounts of $967 and $513, respectively	60,855	59,709
Inventories	53,728	51,074
Prepaid expenses and other	9,417	8,058
Total current assets	144,353	132,216
Property, plant and equipment	174,741	160,725
Less - accumulated depreciation	(66,507)	(65,585)
Property, plant and equipment, net	108,234	95,140
Purchased intangible assets, net	5,880	8,589
Deferred tax assets	3,836	4,001
Other assets	15,118	472
Total assets	$ 277,421	$ 240,418
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 34,758	$ 24,243
Accrued expenses	6,903	8,967
Accrued anti-dumping penalties	—	8,000
Dividend payable	1,866	295
Accrued income taxes	9,651	9,545
Accrued employee compensation and benefits	10,668	9,250
Contract liabilities	2,736	1,140
Current portion of long-term debt	3,125	3,125
Other current liabilities	1,716	—
Total current liabilities	71,423	64,565
Long-term debt	11,147	38,230
Deferred tax liabilities	3,786	379
Other long-term liabilities	18,924	2,958
Total liabilities	105,280	106,132
Commitments and Contingencies (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; 14,652,675 and 14,905,776 shares outstanding, respectively	756	749
Additional paid-in capital	85,639	80,077
Retained earnings	119,002	89,291
Other cumulative comprehensive loss	(25,803)	(35,014)
Treasury stock, at cost, and company stock held for deferred compensation, at par; 464,532 and 82,186 shares, respectively	(7,453)	(817)
Total stockholders' equity	172,141	134,286
Total liabilities and stockholders' equity	277,421	240,418

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

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

	Year Ended December 31,		
	2019	2018	2017
Net sales	$ 397,550	$ 326,429	$ 192,803
Cost of products sold	252,627	215,734	133,412
Gross profit	144,923	110,695	59,391
Costs and expenses:			
General and administrative expenses	37,976	38,452	27,135
Selling and distribution expenses	27,475	22,761	18,589
Amortization of purchased intangible assets	1,544	2,944	4,060
Restructuring expenses, net and asset impairments	19,503	1,114	4,283
Anti-dumping duty penalties	—	8,000	—
Goodwill impairment charge	—	—	17,584
Total costs and expenses	86,498	73,271	71,651
Operating income (loss)	58,425	37,424	(12,260)
Other expense:			
Other expense, net	(169)	(1,202)	(1,376)
Interest expense, net	(1,554)	(1,615)	(1,648)
Income (loss) before income taxes	56,702	34,607	(15,284)
Income tax provision	22,661	4,134	3,569
Net income (loss)	34,041	30,473	(18,853)
Net income (loss) per share:			
Basic	$ 2.29	$ 2.05	$ (1.31)
Diluted	$ 2.28	$ 2.04	$ (1.31)
Weighted-average shares outstanding:			
Basic	14,579,608	14,529,745	14,346,851
Diluted	14,655,350	14,620,635	14,346,851
Dividends declared per common share	$ 0.29	$ 0.08	$ 0.08

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

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

	Year Ended December 31,		
	2019	2018	2017
Net income (loss)	$ 34,041	$ 30,473	$ (18,853)
Change in cumulative foreign currency translation adjustment	(1,209)	(4,195)	10,695
Reclassification of DynaEnergetics Siberia cumulative translation loss to Statement of Operations upon substantial liquidation	10,420	—	—
Total comprehensive income (loss)	$ 43,252	$ 26,278	$ (8,158)

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

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

	Common Stock		Additional Paid-In	Retained	Other Cumulative Comprehensive	Treasury Stock, at cost, and Company Stock Held for Deferred Compensation, at par		
	Shares	Amount	Capital	Earnings	Loss	Shares	Amount	Total
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
Net income	—	—	—	30,473	—	—	—	30,473
Change in cumulative foreign currency translation adjustment	—	—	—	—	(4,195)	—	—	(4,195)
Shares issued in connection with stock compensation plans	166,161	8	434	—	—	—	—	442
Adjustment for cumulative effect from change in accounting principle (ASU 2016-16)	—	—	—	(65)	—	—	—	(65)
Stock-based compensation	—	—	3,497	—	—	—	—	3,497
Dividends declared	—	—	—	(1,191)	—	—	—	(1,191)
Treasury stock purchases	—	—	—	—	—	(42,403)	(455)	(455)
Balances, December 31, 2018	14,987,962	$ 749	$ 80,077	$ 89,291	$ (35,014)	(82,186)	$ (817)	$ 134,286
Net income	—	—	—	34,041	—	—	—	34,041
Change in cumulative foreign currency translation adjustment	—	—	—	—	(1,209)	—	—	(1,209)
Reclassification of DynaEnergetics Siberia cumulative translation loss to Statement of Operations upon substantial liquidation	—	—	—	—	10,420	—	—	10,420
Shares issued in connection with stock compensation plans	129,245	7	550	—	—	7,502	—	557
Stock-based compensation	—	—	5,012	—	—	—	—	5,012
Dividends declared	—	—	—	(4,330)	—	—	—	(4,330)
Treasury stock activity	—	—	—	—	—	(389,848)	(6,636)	(6,636)
Balances, December 31, 2019	15,117,207	$ 756	$ 85,639	$ 119,002	$ (25,803)	(464,532)	$ (7,453)	$ 172,141

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

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

	Year Ended December 31,		
	2019	2018	2017
Cash flows provided by operating activities:			
Net income (loss)	$ 34,041	$ 30,473	$ (18,853)
Adjustments to reconcile net income (loss) to net cash provided by operating activities:			
Depreciation	8,316	6,576	6,506
Amortization of purchased intangible assets	1,544	2,944	4,060
Amortization and write-off of deferred debt issuance costs	178	314	390
Stock-based compensation	5,204	3,580	2,975
Deferred income tax benefit	4,289	(3,653)	(556)
Loss on disposal of property, plant and equipment	530	78	125
Restructuring and asset impairment expenses	19,503	1,114	4,283
Goodwill impairment charge	—	—	17,584
Transition tax liability	—	(679)	946
Change in:			
Accounts receivable, net	(1,221)	(11,409)	(14,425)
Inventories	(2,671)	(16,610)	(5,294)
Prepaid expenses and other	(5,724)	491	(440)
Accounts payable	10,145	2,197	5,216
Contract liabilities	1,603	(4,721)	3,207
Accrued anti-dumping duties and penalties	(8,000)	4,391	(2,941)
Accrued expenses and other liabilities	(3,143)	12,552	3,964
Net cash provided by operating activities	64,594	27,638	6,747
Cash flows used in investing activities:			
Acquisition of property, plant and equipment	(27,210)	(45,095)	(6,186)
Proceeds on sale of property, plant and equipment	1,263	—	2
Net cash used in investing activities	(25,947)	(45,095)	(6,184)
Cash flows provided by (used in) financing activities:			
(Payments) borrowings on revolving loans, net	(17,129)	(1,628)	2,000
(Payments) borrowings on capital expenditure facility	(10,125)	25,000	—
Payment of dividends	(2,762)	(1,189)	(1,174)
Payment of deferred debt issuance costs	—	(314)	(138)
Net proceeds from issuance of common stock to employees and directors	557	442	296
Treasury stock purchases	(1,103)	(453)	(337)
Net cash provided by (used in) financing activities	(30,562)	21,858	647
Effects of exchange rates on cash	(1,107)	(9)	1,354
Net increase in cash and cash equivalents	6,978	4,392	2,564
Cash and cash equivalents, beginning of the period	13,375	8,983	6,419
Cash and cash equivalents, end of the period	20,353	13,375	8,983
Supplemental disclosure of cash flow information:			
Non-cash lease liabilities arising from obtaining right-of-use assets	$ 8,821	$ —	$ —
Cash paid during the period for -			
Interest	$ 1,445	$ 1,383	$ 1,150
Income taxes, net	$ 20,995	$ 1,284	$ 124

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

DMC GLOBAL INC.
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
DECEMBER 31, 2019
(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 a diversified holding company headquartered in Broomfield, Colorado and has manufacturing facilities in the United States and Germany. DMC’s portfolio currently consists of two businesses: DynaEnergetics and NobelClad, which collectively address the energy, industrial processing and transportation markets. DynaEnergetics is an international developer, manufacturer and marketer of advanced explosive components and systems used to perforate oil and gas wells. NobelClad is a leading global manufacturer of explosion-welded clad metal plates, which are used to fabricate capital equipment utilized within various process industries and other industrial sectors.

DMC’s objective is to identify well-run businesses and strong management teams and support them with long-term capital and strategic, legal, technology and operating resources. Our approach helps our portfolio companies grow core businesses, launch new initiatives, upgrade technologies and systems to support their long-term strategy, and make acquisitions that improve their competitive positions and expand their markets. DMC’s culture is to foster local innovation versus centralized control and to stand behind our businesses in ways that truly add value.

2. SIGNIFICANT ACCOUNTING POLICIES

Principles of Consolidation

The Company's consolidated financial statements ("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 of 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 are referred to as translation adjustments. 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 expense, net" as unrealized, based on period-end exchange rates, or realized, upon settlement of the transaction. 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 meet its financial obligation to us, we record a specific 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 write down inventory to its net realizable value by recording provisions for excess, slow moving and obsolete inventory. 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.

Inventories consisted of the following at December 31:

	2019	2018
Raw materials	$ 26,173	$ 26,544
Work-in-process	12,194	7,157
Finished goods	15,045	16,904
Supplies	316	469
	$ 53,728	$ 51,074

Shipping and handling costs incurred by us upon shipment from our manufacturing facilities directly to customers are included in "Cost of products sold" while shipping and handling costs incurred by us upon shipment from our distribution centers to customers are included in "Selling and distribution expenses" 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

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

	2019	2018
Land	$ 3,551	$ 3,794
Buildings and improvements	58,069	58,045
Manufacturing equipment and tooling	72,081	51,955
Furniture, fixtures and computer equipment	21,683	21,061
Other	6,041	5,762
Construction in process	13,316	20,108
	$ 174,741	$ 160,725

The increase in gross property, plant and equipment in 2019 versus 2018 primarily related to additional construction at DynaEnergetics' 74,000 square foot manufacturing assembly and administrative space on its manufacturing campus in Blum, Texas.

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 group are not sufficient to recover the related carrying value, we estimate the fair value of the asset. Impairment is recognized when the carrying amount of the asset group 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, 2019, we recognized an impairment charge of approximately $6,231 (recorded in “Restructuring expenses, net and asset impairments”) associated with ceasing DynaEnergetics' operations in Tyumen, Siberia related to production assets. The fair value of applicable Russian assets upon which an impairment charge was taken was primarily based upon the Company's estimates of fair value of the assets as we negotiated disposal of the assets. For the year ended December 31, 2018, no impairments were recorded. For the year ended December 31, 2017, we recognized an impairment charge of approximately $1,241 (recorded in “Restructuring expenses, net and asset impairments”) 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 recorded was primarily based upon the utilization of a third-party appraiser. Refer to Note 9 “Restructuring and Asset Impairments” for additional discussion.

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.

In the third quarter of 2017, NobelClad experienced a significant decline in its small size core maintenance bookings within the oil and gas industry. Additionally, certain large petrochemical projects forecasted to ship in the subsequent 12 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 calculated the fair value of NobelClad using a discounted cash flow analysis, compared the value to the carrying value of the NobelClad reporting unit, and found that the carrying value exceeded the fair value by more than the book value of goodwill. During the quarter ended September 30, 2017, we recorded an impairment charge of $17,584 to fully impair all goodwill related to this reporting unit.

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 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. For the year ended December 31, 2019, we recognized an impairment charge of approximately $238 (recorded in “Restructuring expenses, net and asset impairments”) to fully impair the net value of customer relationship assets associated with DynaEnergetics Siberia after ceasing DynaEnergetics' operations in Tyumen, Siberia. For the years ended December 31, 2018 and 2017, there were no impairments of purchased intangible assets.

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

Core technology	8 years
Customer relationships	4 months

Our purchased intangible assets, other than goodwill, consisted of the following as ofDecember 31, 2019:

	Gross	Accumulated Amortization	Net
Core technology	$ 17,717	$ (11,837)	$ 5,880
Customer relationships	35,091	(35,091)	—
Trademarks / Trade names	1,988	(1,988)	—
Total intangible assets	$ 54,796	$ (48,916)	$ 5,880

Our purchased intangible assets, other than goodwill, consisted of the following as ofDecember 31, 2018:

	Gross	Accumulated Amortization	Net
Core technology	$ 18,916	$ (10,866)	$ 8,050
Customer relationships	37,122	(36,583)	539
Trademarks / Trade names	2,031	(2,031)	—
Total intangible assets	$ 58,069	$ (49,480)	$ 8,589

The change in the gross value of our purchased intangible assets atDecember 31, 2019 from December 31, 2018 was due to the impairment of customer relationship assets associated with DynaEnergetics Siberia, 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 intangible assets related to the historical acquisition.

Expected future amortization of intangible assets is as follows:

For the years ended December 31 -	
2020	$ 1,126
2021	872
2022	692
2023	692
2024	676
Thereafter	1,822
	$ 5,880

Leases

On January 1, 2019, the Company adopted a new accounting standard, as amended, that requires the Company to record assets and liabilities on the balance sheet for lease-related rights and obligations and disclose key information about its leasing arrangements. The Company elected the modified retrospective approach upon adoption and elected the package of practical expedients available under the new standard. This new standard establishes a right-of-use (“ROU”) model that requires the Company to recognize ROU assets and lease liabilities on the balance sheet for all leases with a term longer than 12 months at commencement of the lease. Leases are classified as financing or operating, with classification affecting the pattern of expense recognition in the Consolidated Statement of Operations.

The Company leases real properties for use in manufacturing and as administrative and sales offices, and leases automobiles and office equipment. Until the end of 2018, our leases of property, plant and equipment were classified as operating leases, and payments made under operating leases were charged to the Consolidated Statement of Operations on a straight-line basis. Upon adoption of the new lease standard on January 1, 2019, the Company recognized ROU assets and lease liabilities in relation to the leases which had previously been classified as operating leases.

The Company determines if a contract contains a lease arrangement at the inception of the contract. For leases in which the Company is the lessee, leases are classified as either finance or operating. ROU assets are initially measured at the present value of lease payments over the lease term plus initial direct costs, if any, with the classification affecting the pattern of expense recognition. ROU assets are amortized on a straight line basis to the Consolidated Statement of Operations. If a lease does not provide a discount rate and the rate cannot be readily determined, an incremental borrowing rate is used to determine the future lease payments. Lease and non-lease components within the Company's lease agreements are accounted for together. The Company has no leases in which the Company is the lessor.

Nearly all of the Company's leasing arrangements are classified as operating leases. As ofDecember 31, 2019, the total ROU assets and lease liabilities for operating leases were $10,423 and $11,493, respectively. The ROU assets of$10,423 was included in "Other assets" while$1,716 of the lease liabilities were reported in "Other current liabilities" and $9,777 was reported in "Other long-term liabilities" on the Company's Consolidated Balance Sheets. The Company's financing leases were not material as of December 31, 2019. Cash paid for operating lease liabilities are recorded as cash flows from operating activities in the Company's Consolidated Statements of Cash Flows. Total operating lease expense included in in the Company's Consolidated Statements of Income was $4,012, $2,840 and $2,988 for the years ended December 31,2019, 2018, and 2017, respectively. Short term and variable lease costs were not material for the year-endedDecember 31, 2019.

Certain of the Company's leases contain renewal options and options to extend the leases for up tofive years, and a majority of these options are reflected in the calculation of the ROU assets and lease liability due to the likelihood of renewal

The following table summarizes the weighted average lease terms and discount rates for operating lease liabilities:

	December 31, 2019
Weighted average remaining lease term (in years)	8.97
Weighted average discount rate	5.2%

The following table represents maturities of operating lease liabilities as ofDecember 31, 2019:

Due within 1 year	$	1,716
Due after 1 year through 2 years		1,846
Due after 2 years through 3 years		1,573
Due after 3 years through 4 years		1,428
Due after 4 years through 5 years		1,268
Thereafter		6,866
Total future minimum lease payments		14,697
Less imputed interest		(3,204)
Total	$	11,493

Contract Liabilities

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. Contract liabilities were as follows at December 31:

		2019		2018
NobelClad	$	1,427	$	922
DynaEnergetics		1,309		218
Total	$	2,736	$	1,140

We expect to recognize the revenue associated with contract liabilities over a time period no longer than one year. Approximately90% of the $1,140 recorded as contract liabilities at December 31, 2018, was recorded to net sales during the year endedDecember 31, 2019.

Revenue Recognition

On January 1, 2018, the Company adopted a new accounting standard, as amended, regarding revenue from contracts with customers using the modified retrospective approach, which was applied to all contracts with customers. Under the new standard, an entity is required to recognize revenue to depict the transfer of promised goods to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods.

There was no cumulative financial statement effect of initially applying the new revenue standard because an analysis of our contracts supported the recognition of revenue consistent with our historical approach. In accordance with the modified retrospective approach, the comparative information has not been restated and continues to be reported under the accounting standards in effect for those periods.

The Company's revenues are primarily derived from consideration paid by customers for tangible goods. The Company analyzes its different products by segment to determine the appropriate basis for revenue recognition, as described below. Revenue is not generated from sources other than contracts with customers and revenue is recognized net of any taxes collected from customers, which are subsequently remitted to governmental authorities. There are no material upfront costs for operations that are incurred from contracts with customers.

Our rights to payments for goods transferred to customers arise when control is transferred at a point in time and not on any other criteria. Payment terms and conditions vary by contract, although terms generally include a requirement of payment within 30 to 60 days. In instances when we require customers to make advance payments prior to the shipment of their orders, we record a contract liability. We have determined that our contract liabilities do not include a significant financing component given the short duration between order initiation and order fulfillment within each of our segments. Refer to Note 6 "Business Segments" for disaggregated revenue disclosures.

For the years ended December 31, 2019, 2018 and 2017, we recorded $575, $282, and $306 of bad debt expense, respectively.

NobelClad

Customers agree to terms and conditions at the time of initiating an order. The significant majority of transactions contain a single performance obligation - the delivery of a clad metal product. In instances where multiple products are included within an order, each product represents a separate performance obligation given that: (1) the customer can benefit from each product on a standalone basis and (2) each product is distinct within the context of the contract.

The transaction price is readily determinable and fixed at the time the transaction is entered into with the customer. NobelClad is entitled to each product's transaction price upon the customer obtaining control of the item. Such control occurs as of a point in time, which is generally based upon relevant International Commercial Terms ("Incoterms") as it relates to product ownership and legal title being transferred. Upon fulfillment of applicable Incoterms, NobelClad has performed its contractual requirements such that it has a present right to payment, and the customer from that point forward bears all risks and rewards of ownership. In addition, at this date, the customer has the ability to direct the use of, or restrict access to, the asset. No payment discounts, rebates, refunds, or any other forms of variable consideration are included within NobelClad contracts. NobelClad also does not provide service-type warranties either via written agreement or customary business practice, nor does it allow customer returns.

For contracts that contain only one performance obligation, the total transaction price is allocated to the sole performance obligation. For contracts which contain multiple distinct performance obligations, judgment is required to determine the standalone selling price ("SSP") for each performance obligation. NobelClad uses the expected cost plus margin approach in order to estimate SSP, whereby an entity forecasts its expected costs of satisfying a performance obligation and then adds an appropriate margin for that good. The required judgment described herein largely is mitigated given the short duration between order initiation and complete order fulfillment.

DynaEnergetics

Customers agree to terms and conditions at the time of initiating an order. Transactions contain standard products, which may include perforating system components, such as detonating cord, or systems and associated hardware, including factory-assembled DynaStage® perforating systems and DynaSelect® detonators. In instances where multiple products are included within an order, each product represents a separate performance obligation given that: (1) the customer can benefit from each product on a standalone basis and (2) each product is distinct within the context of the contract.

The transaction price is readily determinable and fixed at the time the transaction is entered into with the customer. DynaEnergetics is entitled to each product's transaction price upon the customer obtaining control of the item. Such control occurs as of a point in time, which is generally based upon relevant Incoterms as it relates to product ownership and legal title being transferred. Upon fulfillment of applicable Incoterms, DynaEnergetics has performed its contractual requirements such that it has a present right to payment, and the customer from that point forward bears all risks and rewards of ownership. In addition, at this date, the customer has the ability to direct the use of, or restrict access to, the asset. No payment discounts, rebates, refunds, or any other forms of variable consideration are included within contracts. DynaEnergetics also does not provide service-type warranties either via written agreement or customary business practice, nor does it allow customer returns without its prior approval.

For orders that contain only one performance obligation, the total transaction price is allocated to the sole performance obligation. For orders that contain multiple products being purchased by the customer, judgment is required to determine SSP for each distinct performance obligation. However, such judgment largely is mitigated given that products purchased are generally shipped at the same time. In instances where products purchased are not shipped at the same time, DynaEnergetics uses the contractually stated price to determine SSP as this price approximates the price of each good as sold separately.

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 were as follows for the years ended December 31:

	2019	2018	2017
DynaEnergetics research and development costs	$ 7,057	$ 5,932	$ 4,335
NobelClad research and development costs	1,393	1,278	833
Total research and development costs	$ 8,450	$ 7,210	$ 5,168

Earnings Per Share

The Company computes earnings per share ("EPS") using a two-class method, which is an earnings allocation formula that determines EPS for (i) each class of common stock (the Company has a single class of common stock), and (ii) participating securities according to dividends declared and participation rights in undistributed earnings. Restricted stock awards are considered participating securities as they receive non-forfeitable rights to dividends as common stock.

Basic EPS is then calculated by dividing net income (loss) available to common shareholders of the Company by the weighted-average number of common shares outstanding during the period. Diluted EPS adjusts basic EPS for the effects of restricted stock awards, restricted stock units, performance share units and other potentially dilutive financial instruments (dilutive securities), only in the periods in which such effect is dilutive. The effect of the dilutive securities is reflected in diluted EPS by application of the more dilutive of (1) the treasury stock method or (2) the two-class method assuming nonvested shares are not converted into common shares. For the periods presented, diluted EPS using the treasury stock method was less dilutive than the two-class method; as such, only the two-class method has been included below.

EPS was calculated as follows for the years ended December 31:

	2019	2018	2017
Net income (loss) as reported	$ 34,041	$ 30,473	$ (18,853)
Less: Distributed net income available to participating securities	(85)	(27)	—
Less: Undistributed net income available to participating securities	(582)	(666)	—
Numerator for basic net income per share:	33,374	29,780	(18,853)
Add: Undistributed net income allocated to participating securities	582	666	—
Less: Undistributed net income reallocated to participating securities	(579)	(662)	—
Numerator for diluted net income per share:	33,377	29,784	(18,853)
Denominator:			
Weighted average shares outstanding for basic net income per share	14,579,608	14,529,745	14,346,851
Effect of dilutive securities	75,742	90,890	—
Weighted average shares outstanding for diluted net income per share	14,655,350	14,620,635	14,346,851
Net income (loss) per share:			
Basic	$ 2.29	$ 2.05	$ (1.31)
Diluted	$ 2.28	$ 2.04	$ (1.31)

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 accounts receivable and payable, accrued expenses, revolving loans under our credit facility and borrowings under our capital expenditure facility approximate their fair value. Our revolving loans and borrowings under our capital expenditure facility reset each month at market interest rates. All of these items 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 classify these investments as Level 2 in the fair value hierarchy. Money market funds and mutual funds held to satisfy future deferred compensation obligations are valued based upon the market values of underlying securities, and therefore we classify these assets as Level 2 in the fair value hierarchy.

We did not hold any Level 3 assets or liabilities as of December 31, 2019 or December 31, 2018. The asset impairment charges recorded in the fourth quarters of 2019 and 2018 and the goodwill impairment charge recorded in the third quarter of 2017 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, 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, 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 further information on our income taxes.

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, 2019, 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, 2019, 2018, and 2017 consisted entirely of currency translation adjustments including those in intra-entity foreign currency transactions that are classified as long-term investments. During 2019, the Company substantially liquidated the assets and liabilities of DynaEnergetics Siberia, as defined by U.S. GAAP, and as a result the cumulative foreign currency translation losses were reclassified to "Restructuring expenses, net and asset impairments" in the Consolidated Statement of Operations from "Other cumulative comprehensive loss" in the Consolidated Balance Sheets. Refer to Note 9 "Restructuring and Asset Impairments" for additional discussion.

Recent Accounting Pronouncements

In June 2016, the FASB issued a new accounting pronouncement regarding credit losses for financial instruments. The new standard requires entities to measure expected credit losses for certain financial assets held at the reporting date using a current expected credit loss model, which is based on historical experience, adjusted for current conditions and reasonable and supportable forecasts. The Company will adopt the new standard on January 1, 2020. The Company's financial instruments within the scope of this guidance primarily include trade receivables, and management does not expect a material impact to its financial statements upon adoption in 2020.

3. DEBT

Outstanding borrowings consisted of the following at December 31:

	2019	2018
Syndicated credit agreement:		
U.S. Dollar revolving loan	$ —	$ 17,128
Capital expenditure facility	14,875	25,000
Outstanding borrowings	14,875	42,128
Less: debt issuance costs	(603)	(773)
Total debt	14,272	41,355
Less: current portion of long-term debt	(3,125)	(3,125)
Long-term debt	$ 11,147	$ 38,230

Syndicated Credit Agreement

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 includes a $25,000 Capital Expenditure Facility (“Capex Facility”) which was used to assist in financing our DynaEnergetics manufacturing expansion project in Blum, Texas. In March 2019, the Capex Facility converted from a revolving loan to a term loan which is amortizable at 12.5% of principal per year with a balloon payment for the outstanding balance upon the credit facility maturity date in 2023. In 2019, we prepaid an additional $7,000 above the required amortization amount. The credit 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 limit 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 rate, an adjusted Federal Funds rate 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%). All revolving loan borrowings and repayments have been in the form of one- or two-month loans and are reported on a net basis in our Consolidated Statements of Cash Flows.

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%). We did not make any borrowings during 2019 or 2018 under the alternative currency sublimit.

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, 2019, we were in compliance with all financial covenants and other provisions of our debt agreements.

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 and is also used to issue bank guarantees to customers to secure advance payments made by them. As of December 31, 2019, we had no outstanding borrowings under this line of credit and bank guarantees of €2,808 secured by the line of credit. The line of credit bears interest at a EURIBOR-based variable rate which at December 31, 2019 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 long-term debt are deferred debt issuance costs of $603 and $773 as of December 31, 2019 and 2018, respectively. Upon entering into the credit facility on March 8, 2018, we wrote off $159 of previously deferred debt issuance costs and incurred $821 of additional costs. Debt issuance costs of $507 were paid directly by the administrative agent and increased outstanding amounts under U.S. dollar revolving loans, and debt issuance costs of $314 were paid by the Company. Deferred debt issuance costs are being amortized over the remaining term of the credit facility, which expires on March 8, 2023.

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 for the years ended December 31:

	2019	2018	2017
Cost of products sold	$ 620	$ 342	$ 282
General and administrative expenses	4,052	2,862	2,337
Selling and distribution expenses	532	376	356
Stock-based compensation expense, net of income taxes	5,204	3,580	2,975
Earnings per share impact			
Basic	$ 0.36	$ 0.25	$ 0.21
Diluted	$ 0.36	$ 0.24	$ 0.21

On November 4, 2016, our stockholders approved the 2016 Omnibus Incentive Plan ("2016 Plan"). The 2016 Plan provides for the granting of various types of equity-based incentives, including stock options, RSAs, RSUs, 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, less1,639,881 of RSAs and RSUs previously granted under the 2006 Stock Incentive Plan ("2006 Plan") as of the 2006 Plan's expiration of September 21, 2016. As of the inception of the 2016 plan on September 21, 2016, 3,360,119 shares were available for grant under the 2016 Plan. As of December 31, 2019, we have granted RSAs, RSUs, and PSUs representing an aggregate of661,672 shares of stock under the 2016 Plan, and 2,698,447 shares are available for future grant.

RSAs and RSUs are granted to employees and non-employee directors based on time-vesting. For RSAs or RSUs granted to employees, vesting occurs in one-third increments on the first, second, and third anniversary of the grant date. For RSAs or RSUs granted to non-employee directors, vesting occurs on the first anniversary of the grant date. Each RSA represents a restricted share that has voting and dividend rights and becomes fully unrestricted upon vesting. Each RSU represents the right to receive one share of 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.

PSUs are granted to employees with vesting based on performance and market conditions. Each PSU represents the right to receiveone share of stock upon 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. 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 PSUs 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 resulting fair value is amortized to 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 is as follows:

	Shares	Weighted Average Grant Date Fair Value
Balance at December 31, 2017	256,068	$ 15.31
Granted	102,817	25.11
Vested	(63,288)	14.89
Forfeited	(5,666)	19.26
Balance at December 31, 2018	289,931	$ 18.81
Granted	75,531	48.74
Vested	(71,317)	24.67
Forfeited	(2,665)	18.65
Balance at December 31, 2019	291,480	$ 25.12

A summary of the activity of our nonvested shares of RSAs issued under the 2006 Plan is as follows:

	Shares	Weighted Average Grant Date Fair Value
Balance at December 31, 2017	153,030	$ 15.14
Vested	(71,223)	10.03
Forfeited	(18,772)	8.40
Balance at December 31, 2018	63,035	$ 22.91
Vested	(62,537)	8.65
Forfeited	(498)	6.22
Balance at December 31, 2019	—	$ —

A summary of the activity of our nonvested RSUs issued under the 2016 Plan is as follows:

	Shares	Weighted Average Grant Date Fair Value
Balance at December 31, 2017	72,500	$ 15.62
Granted	36,000	21.88
Vested	(13,175)	15.61
Balance at December 31, 2018	95,325	$ 17.99
Granted	25,576	45.97
Vested	(28,843)	18.16
Forfeited	(4,999)	19.67
Balance at December 31, 2019	87,059	$ 26.05

A summary of the activity of our nonvested RSUs issued under the 2006 Plan is as follows:

	Share Units	Weighted Average Grant Date Fair Value
Balance at December 31, 2017	58,398	$ 13.42
Vested	(32,069)	10.74
Balance at December 31, 2018	26,329	$ 16.69
Vested	(26,329)	6.96
Balance at December 31, 2019	—	$ —

A summary of the activity of our nonvested PSUs issued under the 2016 Plan is as follows:

	Shares	Weighted Average Grant Date Fair Value
Balance at December 31, 2017	23,000	$ 18.18
Granted	23,000	26.47
Balance at December 31, 2018	46,000	$ 22.32
Granted	17,640	60.75
Balance at December 31, 2019	63,640	$ 32.97

As of December 31, 2019, total unrecognized stock-based compensation related to unvested awards was as follows:

	Unrecognized stock compensation	Weighted-average recognition period
Unvested RSAs	$ 4,241	1.8 years
Unvested RSUs	$ 1,282	1.6 years
Unvested PSUs	$ 1,192	1.1 years

Employee Stock Purchase Plan

We have an Employee Stock Purchase Plan ("ESPP") pursuant to which we are authorized to issue up to850,000 shares of DMC common stock, of which 224,812 shares remain available for future purchase as of December 31, 2019. 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 stock at the lesser of 85% of the fair market value of the stock on the Offering Date or the Purchase Date. In connection with the ESPP, 16,553, 18,100, and 26,519 shares of our stock were purchased during the years endedDecember 31, 2019, 2018, and 2017, respectively. Our total stock-based compensation expense for 2019, 2018, and 2017 includes $159, $121, and $92, 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 to100% 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$1,156, $828, and $511 for the years ended December 31, 2019, 2018 and 2017, respectively.

Deferred Compensation Plan

The Company maintains a Non-Qualified Deferred Compensation Plan (the "Plan") as part of its overall compensation package for certain employees. Participants are eligible to defer a portion of their annual salary, their annual incentive bonus, and their equity awards through the Plan on a tax-deferred basis. Deferrals into the Plan are not matched or subsidized by the Company, nor are they eligible for above-market or preferential earnings.

The Plan provides for deferred compensation obligations to be settled either by delivery of a fixed number of shares of DMC's common stock or in cash, in accordance with participant contributions and elections. For deferred equity awards, subsequent to equity award vesting and after a period prescribed by the Plan, participants can elect to diversify contributions of equity awards into other investment options available to Plan participants. Once diversified, contributions of equity awards will be settled by delivery of cash.

During the second quarter of 2019, the Company established a grantor trust commonly known as a "rabbi trust" and contributed certain assets to satisfy the future obligations to participants in the Plan. These assets are subject to potential claims of the Company's general creditors. The assets held in the trust include unvested RSAs, vested company stock awards, company-owned life insurance ("COLI") on certain employees, and money market and mutual funds. Unvested RSAs and common stock held by the trust are reflected in the Consolidated Balance Sheets within "Treasury stock, at cost, and company stock held for deferred compensation, at par" at the par value of the common stock or unvested RSAs. These accounts are not adjusted for subsequent changes in the fair value of the common stock. COLI is accounted for at the cash surrender value while money market and mutual funds held by the trust are accounted for at fair value, and the balance of $4,461 as of December 31, 2019 is reflected in the Consolidated Balance Sheets within “Other assets”, and subsequent increases or decreases in the fair values of the assets are recorded as compensation expense or benefit, respectively, within “General and administrative expenses” in the Consolidated Statements of Operations.

Deferred compensation obligations that will be settled in cash are accounted for on an accrual basis in accordance with the terms of the Plan and the balance of $6,090 as of December 31, 2019 is reflected in the Consolidated Balance Sheets within “Other long-term liabilities.” These obligations are adjusted based on changes in value of the underlying investment options chosen by Plan participants. Deferred compensation obligations that will be settled by delivery of a fixed number of previously vested shares of the Company’s common stock are reflected in the Consolidated Statements of Stockholders’ Equity within “Common stock” at the par value of the common stock or unvested RSAs. These accounts are not adjusted for subsequent changes in the fair value of the common stock.

Defined Benefit Plans

We have defined benefit pension plans at certain foreign subsidiaries for which we have recorded an unfunded pension obligation of $2,079 and $1,708 as of December 31, 2019 and 2018, 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 the service cost component is recorded within "General and administrative expenses" while all other costs are included within "Other expense, net" in the Consolidated Statements of Operations. We recognized expense of $406, $406 and $10 for the years ended December 31, 2019, 2018 and 2017, respectively.

5. INCOME TAXES

The domestic and foreign components of income (loss) before taxes for our operations consist of the following for the years ended December 31:

	2019	2018	2017
Domestic	$ 33,837	$ 9,399	$ (5,942)
Foreign	22,865	25,208	(9,342)
Total income (loss) before income taxes	$ 56,702	$ 34,607	$ (15,284)

The components of the provision (benefit) for income taxes consist of the following for the years ended December 31:

	2019	2018	2017
Current – Federal	$ 4,543	$ 444	$ 946
Current – State	557	371	91
Current – Foreign	13,272	6,972	3,088
Current income tax expense	18,372	7,787	4,125
Deferred – Federal	1,770	98	(393)
Deferred – State	(290)	—	(5)
Deferred -– Foreign	2,809	(3,751)	(158)
Deferred income tax expense (benefit)	4,289	(3,653)	(556)
Income tax provision	$ 22,661	$ 4,134	$ 3,569

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

	2019	2018
Deferred tax assets:		
Net operating loss carryforward	$ 9,138	$ 8,843
Inventory differences	721	695
Equity compensation	1,203	952
Investment in subsidiaries	2,300	2,861
Restructuring	7	12
Purchased goodwill	1,807	2,516
Accrued employee compensation and benefits	2,945	1,459
Lease liabilities	2,259	—
Other, net	134	57
Gross deferred tax assets	20,514	17,395
Less valuation allowances	(9,680)	(9,143)
Total deferred tax assets	10,834	8,252
Deferred tax liabilities:		
Purchased intangible assets and goodwill	(987)	(1,566)
Depreciation and amortization	(7,366)	(2,783)
Right of use assets	(1,997)	—
Other, net	(434)	(281)
Total deferred tax liabilities	(10,784)	(4,630)
Net deferred tax assets	$ 50	$ 3,622

As of December 31, 2019, we had loss carryforwards for tax purposes totaling approximately$60,834, comprised of $53,411 foreign and $7,423 domestic state loss carryforwards, which will be available to offset future taxable income in certain jurisdictions. Certain losses can be carried forward indefinitely, while the remainder generally have carryforward periods of 5 to 20 years, depending on jurisdiction. We have analyzed the 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, 2018, the Company was no longer in a consolidated three-year cumulative loss position. Accordingly, we evaluated deferred tax assets at the jurisdictional level and released valuation allowances of $5,818 in jurisdictions where we believe sufficient future taxable income will be generated to use existing deferred tax assets. We continue to record valuation allowances against deferred tax assets where we do not believe sufficient future taxable income will be generated to use existing deferred tax assets. Accordingly, in 2019 we recorded a net increase of $537 to the valuation allowance comprised of changes principally in Germany and Russia. 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.

A reconciliation of our income tax provision computed by applying the Federal statutory income tax rate of 21% in 2019 and 2018 and 35% in 2017 to income before taxes is as follows for the years ended December 31:

	2019	2018	2017
Statutory U.S. federal income tax	$ 11,907	$ 7,268	$ (5,350)
U.S. state income tax, net of federal benefit	492	430	305
U.S. TCJA - net impact	—	(604)	4,435
Foreign rate differential	4,257	3,054	(1,728)
Tax audit adjustments	—	(11)	426
Equity compensation	(1,469)	(156)	(52)
Deemed repatriation of foreign earnings	187	281	—
Impairment of goodwill		—	239
Non-deductible penalties	—	1,686	1
DynaEnergetics Siberia shut down	6,193	—	—
Other	561	1,046	(95)
Change in valuation allowances	533	(8,860)	5,388
Provision for income taxes	$ 22,661	$ 4,134	$ 3,569

The Tax Cuts and Jobs Act ("TCJA") was enacted in December 2017. Among other things, the TCJA reduced the U.S. federal corporate tax rate from 35% to 21% beginning in 2018, required companies to pay a one-time transition tax on unremitted earnings of non-U.S. subsidiaries that were previously tax deferred, and created new taxes on certain foreign sourced earnings.

We recorded a provisional obligation and additional income tax expense of $946 in 2017, which was reduced to $343 in 2018 in response to additional guidance received from the Internal Revenue Service ("IRS") and upon completion of certain E&P calculations. There were no additional changes in the fourth quarter of 2018 to the amount previously calculated. The Company has elected to pay this liability over eight years. As of December 31, 2019, we reflected $233 in other long term liabilities.

DMC files income tax returns in the U.S. federal jurisdiction, as well as various U.S. state and foreign jurisdictions. During the fourth quarter, our German operating entities commenced a tax audit for fiscal years 2015 through 2017. If any issues addressed in the audit are resolved in a manner not consistent with our expectations, the Company could be required to adjust its provision for income taxes in future periods.

DMC's U.S. federal tax returns are open for examination for the tax years 2016 onward. Most of DMC's state tax returns remain open to examination for the tax years 2015 onward. DMC's foreign tax returns generally remain open to examination for the tax years 2015 onward, depending on jurisdiction.

At December 31, 2019 and 2018, 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, 2019 and 2018, our accrual for interest and penalties related to uncertain tax positions was zero.

The TCJA provides that foreign earnings generally can be repatriated to the U.S. without federal tax consequence. We have reassessed the assertion that cumulative earnings by our foreign subsidiaries are indefinitely reinvested. We continue to permanently reinvest the earnings of our international subsidiaries and therefore we do not provide for U.S. income taxes or withholding taxes that could result from the distribution of those earnings to the U.S. parent. If any such earnings were ultimately distributed to the U.S. in the form of dividends or otherwise, or if the shares of our international subsidiaries were sold or transferred, we could be subject to additional U.S. federal and state income taxes. Due to the multiple avenues in which earnings can be repatriated, and because a large portion of these earnings are not liquid, it is not practical to estimate the amount of additional taxes that might be payable on these amounts of undistributed foreign income.

6. BUSINESS SEGMENTS

Our business is organized in the following two segments: DynaEnergetics and NobelClad. DynaEnergetics designs, manufactures and distributes products utilized by the global oil and gas industry principally for the perforation of oil and gas wells. 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.

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 as follows as of and for the years ended December 31:

	2019	2018	2017
Net sales:			
DynaEnergetics	$ 310,424	$ 237,448	$ 121,253
NobelClad	87,126	88,981	71,550
Net sales	$ 397,550	$ 326,429	$ 192,803

	2019	2018	2017
Operating income (loss):			
DynaEnergetics	$ 68,781	$ 44,476	$ 15,470
NobelClad	7,193	6,499	(17,360)
Segment operating income (loss)	75,974	50,975	(1,890)
Unallocated corporate expenses	(12,345)	(9,971)	(7,395)
Stock-based compensation	(5,204)	(3,580)	(2,975)
Other expense, net	(169)	(1,202)	(1,376)
Interest expense, net	(1,554)	(1,615)	(1,648)
Income (loss) before income taxes	$ 56,702	$ 34,607	$ (15,284)

	2019	2018	2017
Depreciation and Amortization:			
DynaEnergetics	$ 6,375	$ 6,308	$ 6,879
NobelClad	3,046	3,212	3,687
Segment depreciation and amortization	9,421	9,520	10,566
Corporate and other (1)	439	—	—
Consolidated depreciation and amortization	9,860	9,520	$ 10,566

(1) Prior to 2019, the Company fully allocated corporate and other depreciation to the segments.

	2019	2018	2017
Acquisition of property, plant and equipment			
DynaEnergetics	$ 19,785	$ 41,041	$ 4,025
NobelClad	5,560	2,281	1,584
Segment acquisition of property, plant and equipment	25,345	43,322	5,609
Corporate and other	1,865	1,773	577
Consolidated acquisition of property, plant and equipment	$ 27,210	$ 45,095	$ 6,186

	2019	2018
Assets:		
DynaEnergetics	$ 165,775	$ 151,001
NobelClad	58,205	59,831
Segment assets	223,980	210,832
Cash and cash equivalents	20,353	13,375
Prepaid expenses and other assets	24,535	8,530
Deferred tax assets	3,836	4,001
Corporate property, plant and equipment	4,717	3,680
Consolidated assets	$ 277,421	$ 240,418

The geographic location of our property, plant and equipment, net of accumulated depreciation, is as follows at December 31:

	2019	2018
United States	$ 76,957	$ 59,862
Germany	29,499	27,442
Russia	1,495	7,256
Canada	210	198
France	50	377
Rest of the world	23	5
Total	$ 108,234	$ 95,140

All of our sales are from products shipped from our manufacturing facilities and distribution centers located in the United States, Germany, Canada, and Russia. The following represents our net sales based on the geographic location of the customer for years ended December 31:

	For the years ended December 31,		
	2019	2018	2017
United States	$ 309,826	$ 221,847	$ 116,083
Canada	17,688	30,126	23,377
United Arab Emirates	6,614	4,093	1,768
Norway	5,003	990	1,771
Germany	4,900	4,067	5,397
Ukraine	3,824	3,594	1,307
France	3,643	4,581	3,032
Egypt	3,366	2,419	2,721
Oman	3,197	2,112	4,132
South Korea	2,964	2,263	1,173
Russia	2,942	4,117	4,504
Belgium	2,365	3,386	1,628
Netherlands	2,181	2,427	3,088
Australia	2,151	873	1,010
Sweden	2,016	2,339	2,009
Indonesia	1,934	1,201	409
India	1,831	4,291	2,927
Bahrain	1,820	1,065	45
Spain	1,706	1,083	1,126
Rest of the world	17,579	29,555	15,296
Total	$ 397,550	$ 326,429	$ 192,803

During the years ended December 31, 2019 and 2018, no single customer accounted for more than 10% of total net sales. During the year ended December 31, 2017, one customer in our DynaEnergetics segment was responsible for approximately 10% of total net sales.

7. DERIVATIVES

We are exposed to foreign currency exchange risk resulting from fluctuations in exchange rates, primarily the U.S. dollar to the euro, the U.S. dollar to the Canadian dollar and, to a lesser extent, other currencies, arising from inter-company and third party transactions entered into by our subsidiaries that are denominated in currencies other than their functional currency. Changes in exchange rates with respect to these transactions result in unrealized gains or losses if such transactions are 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 to offset foreign exchange rate fluctuations on 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 in "Other expense, net" within our Consolidated Statements of Operations.

We execute derivatives with a specialized foreign exchange brokerage firm. The primary credit risk inherent in derivative agreements represents the possibility that a loss may occur from the nonperformance of a counterparty to the agreements, and thus we perform a review of the credit risk of our counterparties at the inception of the contract and on an ongoing basis. We anticipate that our counterparties will be able to fully satisfy their obligations under the agreements but will take action if doubt arises regarding the counterparties' ability to perform.

As of December 31, 2019 and 2018, the notional amounts of the forward currency contracts the Company held were$22,860 and $7,008, respectively. At December 31, 2019 and 2018, the fair values of outstanding foreign currency forward contracts were$0.

The gain or loss recognized on derivatives is as follows for the years ended December 31:

Derivative type	Income Statement Location	2019	2018	2017
Foreign currency contracts	Other expense, net	$ (969)	$ (77)	$ (157)

8. COMMITMENTS AND CONTINGENCIES

Contingent Liabilities

The Company records an accrual for contingent liabilities when a loss is both probable and reasonably estimable. If some amount within a range of loss appears to be a better estimate than any other amount within the range, that amount is accrued. When no amount within a range of loss appears to be a better estimate than any other amount, the lowest amount in the range is accrued.

Legal Proceedings

From time to time, we may become involved in various lawsuits and legal proceedings which arise in the ordinary course of business. However, litigation is subject to inherent uncertainties, and an adverse result in these or other matters may arise from time to time that may harm our business. We are currently not aware of any such legal proceedings or claims that we believe will have, individually or in the aggregate, a material adverse effect on our business, financial condition or operating results.

The following legal matter was resolved in the second quarter of 2019:

Anti-dumping and Countervailing Duties

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 for our position that 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 bonds of approximately $1,100 to U.S. Customs. Subsequently, U.S. Customs declined to conclude that the mechanical tubing the Company had been importing was 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. 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. On March 16, 2018, the CIT issued its decision on the appeal and sustained the Commerce Department’s scope ruling. The Company did not appeal this ruling, and during the quarter ended September 30, 2018, the Company paid the remaining accrued AD/CVD and interest of $3,461 to U.S. Customs.

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 in an amount of $3,049, which had previously been accrued for in our financial statements. We filed a response to the notice on February 6, 2017. 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 in the amount of $3,049. We tendered $3,049 in AD amounts on March 6, 2017 into a suspense account pending ultimate resolution of the AD/CVD case. We submitted a petition for relief and mitigation of penalties on May 17, 2017.

On March 27, 2018, we received notice from U.S. Customs Headquarters that it intended to move forward with its pursuit of penalties. The Company engaged in discussions with U.S. Customs Headquarters regarding the scope of penalties asserted and the arguments set forth in the Company's petition for relief and mitigation of penalties. Based on these discussions and the Company's assessment of the probable ultimate penalty rate, the Company accrued $3,103 in the first quarter of 2018.

On October 11, 2018, we received a decision from U.S. Customs Headquarters in which a mitigated amount of $8,000 in penalties was asserted. In its financial statements for the quarter ended September 30, 2018, the Company accrued an additional $4,897 of penalties. On December 7, 2018, we submitted a supplemental petition requesting a waiver of the penalty under the Small Business Regulatory Enforcement Act in lieu of tendering the penalty amount. On April 12, 2019, we received notice that our waiver request was denied and tendered the $8,000 in the second quarter of 2019.

Operating Leases and License Agreements

We lease certain office space, equipment, storage space, vehicles and other equipment under various non-cancelable, operating lease agreements. Additionally, we have a license agreement and a risk allocation agreement related to our U.S. NobelClad business to provide us with the ability to perform our explosive shooting process at a second shooting site in Pennsylvania, which we account for as an operating lease. On January 1, 2019, we adopted ASC 842, and recorded assets and liabilities on the balance sheet for these leases. Refer to Note 2 "Summary of Significant Accounting Policies" for further discussion of our lease accounting including our future commitments under those operating lease agreements.

9. RESTRUCTURING AND ASSET IMPAIRMENTS

DynaEnergetics

During the fourth quarter of 2019, regional shifts in North American drilling and completion activity led DynaEnergetics to close distribution facilities in Canada and Oklahoma and to accelerate a planned consolidation of its perforating system assembly operations in Mt. Braddock, Pennsylvania into its flagship North American facility in Blum, Texas.

During the third quarter of 2019, DynaEnergetics completed a series of capacity expansion initiatives at its manufacturing facilities in North America and Germany. The new capacity improved DynaEnergetics' operating efficiencies and enabled the business to more effectively serve its global customer base. Capitalizing on its more efficient manufacturing footprint, DynaEnergetics ceased its operations in Tyumen, Siberia in September 2019. During the third and fourth quarters of 2019, the Company released substantially all of its employees inside Russia, sold inventories and certain fixed assets, and proceeded to wind-down the operation. The Company will not resume operations in Russia.

During the third and fourth quarters of 2019, DynaEnergetics recorded non-cash asset impairment charges of $6,231, which was calculated by comparing the estimated fair value less costs to sell to the carrying value of the assets, severance charges of $1,261, and other exit costs of $268 within "Restructuring expenses, net and asset impairments." Additionally, DynaEnergetics recorded a non-cash inventory write down of $630 within "Cost of products sold" and an accounts receivable write down of $131 within "Selling and distribution expenses" associated with the decision to cease operations in Siberia.

During the fourth quarter of 2019, the Company substantially liquidated the assets and liabilities of DynaEnergetics' Siberian operations, as defined under U.S. GAAP. As a result, the related cumulative foreign currency translation loss of $10,420 was reclassified from the Consolidated Balance Sheets into the Consolidated Statement of Operations and is included within "Restructuring expenses, net and asset impairments." During 2020, the Company anticipates selling or transferring its remaining fixed assets, collecting outstanding accounts receivable, making final severance payments, and commencing the process to legally dissolve the entity, which is expected to be completed by the end of 2021. As of December 31, 2019, total DynaEnergetics Siberia's assets classified as held for sale was $734.

In 2017, DynaEnergetics announced the closure of its operations in Kazakhstan after legislative changes increased our costs to do business while the overall sales in Kazakhstan were not significant to our results. In conjunction with the announcement, we recorded severance expense, wrote off remaining receivables, prepaid assets, and inventory, recorded an asset impairment to reduce the fixed assets to their salable value, and recorded within the Consolidated Statements of Operations foreign exchange losses that had previously been recorded within the Consolidated Balance Sheets through currency translation adjustments, due to the substantial liquidation of the entity.

NobelClad

During the fourth quarter of 2017, NobelClad announced plans to consolidate its European production facilities by closing manufacturing operations in France. During the third quarter of 2018, final approval of the proposed measures was granted by the local workers council, in accordance with applicable French law. NobelClad completed the closure of the Rivesaltes production facility in the fourth quarter of 2018 but maintains its sales and administrative office in France. During the second quarter of 2019, NobelClad sold its production facility and related assets and recognized a gain of $519. During 2019 NobelClad also recorded an additional accrual of$1,166 for known and probable severance liabilities related to employees terminated as part of closing the manufacturing operations in France. The additional severance accrual was recorded based, in part, on a successful appeal of severance benefits by some terminated employees during the second quarter of 2019.

Total restructuring charges incurred for these programs are as follows and are reported in the "Restructuring expenses, net and asset impairments" line item in our Consolidated Statements of Operations for the years ended December 31:

	2019					
	Severance	Asset Impairment / (Gain on asset disposals)	Contract Termination Costs	Equipment Moving Costs	Other Exit Costs (1)	Total
DynaEnergetics	$ 1,671	$ 6,277	$ —	$ —	$ 10,683	$ 18,631
NobelClad	1,166	(636)	39	233	70	872
Total	$ 2,837	$ 5,641	$ 39	$ 233	$ 10,753	$ 19,503

(1) Other exit costs include DynaEnergetics Siberia's cumulative translation losses reclassified into the Consolidated Statement of Operations upon substantial liquidation

	2018				
	Severance	Contract Termination Costs	Equipment Moving Costs	Other Exit Costs	Total
NobelClad	$ 637	$ 43	$ 249	$ 185	$ 1,114

	2017			
	Severance	Asset Impairment	Other Exit Costs	Total
DynaEnergetics	$ 20	$ 143	$ 295	$ 458
NobelClad	2,513	$ 1,241	71	3,825
Total	$ 2,533	$ 1,384	$ 366	$ 4,283

The changes to the restructuring liability within accrued expenses associated with these programs is summarized below:

	December 31, 2018	Expense	Payments	Currency and Other Adjustments	December 31, 2019
Severance	$ 1,105	$ 2,402	$ (1,131)	$ 28	$ 2,404
Contract termination costs	—	39	(39)	—	—
Equipment moving costs	8	233	(241)	—	—
Other exit costs	42	333	(114)	10	271
Total	$ 1,155	$ 3,007	$ (1,525)	$ 38	$ 2,675

10. SELECTED QUARTERLY FINANCIAL DATA (UNAUDITED)

Selected unaudited quarterly financial data were as follows for the years ended December 31:

	2019			
	Quarter ended March 31,	Quarter ended June 30,	Quarter ended September 30,	Quarter ended December 31,
Net sales	$ 100,135	$ 110,954	$ 100,094	$ 86,367
Gross profit	$ 36,405	$ 42,073	$ 36,224	$ 30,221
Net income (loss)	$ 15,170	$ 17,244	$ 6,915	$ (5,288)
Net income (loss) per share				
Basic	$ 1.02	$ 1.17	$ 0.47	$ (0.36)
Diluted	$ 1.01	$ 1.15	$ 0.46	$ (0.36)

	2018			
	Quarter ended March 31,	Quarter ended June 30,	Quarter ended September 30,	Quarter ended December 31,
Net sales	$ 67,313	$ 80,915	$ 87,883	$ 90,318
Gross profit	$ 22,753	$ 26,775	$ 29,728	$ 31,439
Net income	$ 3,920	$ 6,372	$ 4,910	$ 15,271
Net income per share				
Basic	$ 0.26	$ 0.43	$ 0.33	$ 1.02
Diluted	$ 0.26	$ 0.43	$ 0.33	$ 1.02

ITEM 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

There are no changes in or disagreements with accountants on accounting and financial disclosure for the fiscal year ended December 31, 2019.

ITEM 9A. Controls and Procedures

Evaluation of Disclosure Controls and Procedures

Our Chief Executive Officer and Chief Financial Officer have evaluated the effectiveness of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934). Based on that evaluation, the Company's Chief Executive Officer and Chief Financial Officer concluded that the Company's disclosure controls and procedures were effective as of December 31, 2019. Our management's annual report on internal control over financial reporting is set forth below.

Management's Report on Internal Control over Financial Reporting

The management of DMC Global Inc. ("DMC") is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Exchange Act Rules 13a-15(f) and 15d-15(f).

Under the supervision and with the participation of DMC's management, including its Chief Executive Officer and Chief Financial Officer, management conducted an evaluation of the effectiveness of DMC's internal control over financial reporting as of December 31, 2019 based on the 2013 framework in "Internal Control - Integrated Framework" issued by the Committee of Sponsoring Organizations of the Treadway Commission. In designing and evaluating the internal control over financial reporting, management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Based upon this evaluation, our Chief Executive Officer and Chief Financial Officer concluded that, as ofDecember 31, 2019, our internal controls over financial reporting were effective.

DMC's internal control over financial reporting as of December 31, 2019 has also been audited by Ernst & Young LLP, an independent registered public accounting firm, as stated in their attestation report which expressed an unqualified opinion and is included elsewhere herein.

Changes in Internal Control Over Financial Reporting

We rely extensively on information systems to manage our business and summarize and report operating results. In the fourth quarter of 2019, we completed an upgrade of DynaEnergetics' enterprise resource planning ("ERP") system. This project is expected to improve the efficiency and effectiveness of certain financial and business transaction processes, as well as the underlying systems environment. The upgraded ERP system will remain a significant component of our internal control over financial reporting.

Other than the ERP system upgrade noted above, there has been no change in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) promulgated under the Exchange Act) during the fourth quarter of 2019, that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

/s/ Kevin Longe

Kevin Longe
President and Chief Executive Officer
February 24, 2020

/s/ Michael Kuta

Michael Kuta
Chief Financial Officer
February 24, 2020

Report of Independent Registered Public Accounting Firm

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

Opinion on Internal Control over Financial Reporting

We have audited DMC Global Inc.'s internal control over financial reporting as of December 31, 2019, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria). In our opinion, DMC Global Inc. (the Company) maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of the Company as of December 31, 2019 and 2018, 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, 2019, and the related notes and financial statement schedules listed in the Index at Item 15(a) and our report dated February 24, 2020 expressed an unqualified opinion thereon.

Basis for Opinion

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

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects.

Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

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

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

/s/ Ernst & Young LLP

Denver, Colorado
February 24, 2020

ITEM 9B. Other Information

Not applicable.

PART III

ITEM 10. Directors, Executive Officers and Corporate Governance

Item 10 incorporates information by reference to our Proxy Statement for the 2020 Annual Meeting of Stockholders, which is expected to be filed with the SEC within 120 days of the close of fiscal year 2019.

ITEM 11. Executive Compensation

Item 11 incorporates information by reference to our Proxy Statement for the 2020 Annual Meeting of Stockholders, which is expected to be filed with the SEC within 120 days of the close of fiscal year 2019.

ITEM 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters

Item 12 incorporates information by reference to our Proxy Statement for the 2020 Annual Meeting of Stockholders, which is expected to be filed with the SEC within 120 days of the close of fiscal year 2019.

For information regarding securities authorized for issuance under our equity compensation plans see the Proxy Statement for our 2020 Annual Meeting of Shareholders, which information is incorporated herein by reference.

ITEM 13. Certain Relationships and Related Transactions, and Director Independence

Item 13 incorporates information by reference to our Proxy Statement for the 2020 Annual Meeting of Stockholders, which is expected to be filed with the SEC within 120 days of the close of fiscal year 2019.

ITEM 14. Principal Accounting Fees and Services

Item 14 incorporates information by reference to our Proxy Statement for the 2020 Annual Meeting of Stockholders, which is expected to be filed with the SEC within 120 days of the close of fiscal year 2019.

PART IV

ITEM 15. Exhibits and Financial Statement Schedules

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

See Index to Financial Statements in Item 8 of this Annual Report on Form 10-K, which is incorporated herein by reference.

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

See Schedule II beginning on page 93 of this Annual Report on Form 10-K.

(a)(3) **Exhibits**

Exhibit Number	Description
3.1	Amended and Restated Certificate of Incorporation of the Company (incorporated by reference to Exhibit 4.1 to the Company's Current Report on Form 8-K filed with the Commission on November 4, 2016).
3.2	Amended and Restated Bylaws of the Company (incorporated by reference to Exhibit 3.4 to the Company's Current Report on Form 8-K filed with the Commission on August 27, 2018).
4.1	Description of Common Stock
10.1	Credit Agreement dated as of March 8, 2018, by and among the Company, the borrowers party thereto, the guarantors party thereto, the Lenders party thereto, and KeyBank National Association, as administrative agent. (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 10-K filed with the Commission on March 8, 2018).
10.6	Employment Agreement, dated as of March 1, 2013, by and between the Company and Kevin Longe (incorporated by reference to Exhibit 10.2 to the Company's Form 10-K filed with the Commission on March 14, 2013). *

Exhibit Number	Description
10.7	Employment Offer Letter dated February 23, 2014, from the Company to Michael L. Kuta (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed with the Commission on March 31, 2014). *
10.8	Employment Agreement dated July 26, 2013, from the Company to Ian Grieves (incorporated by reference to Exhibit 10.7 to the Company's Form 10-K filed with the Commission on March 9, 2017). *
10.9	Employment Offer Letter dated July 17, 2016, from the Company to Michelle H. Shepston (incorporated by reference to Exhibit 10.8 to the Company's Form 10-K filed with the Commission on March 9, 2017). *
10.10	Employment Offer Letter dated October 7, 2016, from the Company to John E. Scheatzle Jr. (incorporated by reference to Exhibit 10.9 to the Company's Form 10-K filed with the Commission on March 9, 2017). *
10.11	2006 Stock Incentive Plan, as amended by Amendment No. 1 to the Company's 2006 Stock Inventive Plan dated March 11, 2013 (incorporated by reference to Exhibit 10.5 to the Company's Annual Report on Form 10-K filed with the Commission on March 7, 2014).*
10.12	Performance-Based Plan (incorporated by reference to Exhibit 10.3 to the Company's Form 8-K filed with the Commission on May 24, 2013). *
10.13	Amended and Restated Nonqualified Deferred Compensation Plan. (incorporated by reference to Exhibit 10.13 to the Company's Form 10-K filed with the Commission on March 8, 2018) *
10.14	Form of Executive Officer Restricted Stock Award Agreement under 2006 Stock Incentive Plan (incorporated by reference to Exhibit 10.1 to the Company's Form 8-K filed with the Commission on June 12, 2007). *
10.15	Form of Non-Executive Director Restricted Stock Award Agreement under 2006 Stock Incentive Plan (incorporated by reference to Exhibit 10.2 to the Company's Form 8-K filed with the Commission on June 12, 2007). *
10.16	2016 Omnibus Incentive Plan dated November 4, 2016 (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed with the Commission on November 4, 2016).
10.17	Form of Executive Officer Restricted Stock Award Agreement under 2016 Omnibus Incentive Plan (incorporated by reference to Exhibit 10.16 to the Company's Form 10-K filed with the Commission on March 9, 2017). *
10.18	Form of Director Restricted Stock Award Agreement under 2016 Omnibus Incentive Plan. (incorporated by reference to Exhibit 10.18 to the Company's Form 10-K filed with the Commission on March 8, 2018)
10.19	Form of Executive Officer Restricted Stock Unit Agreement under 2016 Omnibus Incentive Plan (incorporated by reference to Exhibit 10.17 to the Company's Form 10-K filed with the Commission on March 9, 2017). *
10.20	Form of Executive Officer Performance Unit Agreement under 2016 Omnibus Incentive Plan (incorporated by reference to Exhibit 10.18 to the Company's Form 10-K filed with the Commission on March 9, 2017). *
10.21	Form of Indemnification Agreement (incorporated by reference to Exhibit 10.4 to the Company's Form 8-K filed with the Commission on January 24, 2011). *
10.22	Sublease for Dunbar, Pennsylvania clad metal shooting site dated December 16, 2000 by and between Mypodiamond, Inc. and the Company. (incorporated by reference to Exhibit 10.22 to the Company's Form 10-K filed with the Commission on March 8, 2018)
10.23	License Agreement dated July 29, 2008 by and between Coolspring Stone Supply Company, Inc. ("CSSC") and the Company. (incorporated by reference to Exhibit 10.23 to the Company's Form 10-K filed with the Commission on March 8, 2018)
10.24	First Amendment to License Agreement dated September 24, 2012 by and between CSSC and the Company. (incorporated by reference to Exhibit 10.24 to the Company's Form 10-K filed with the Commission on March 8, 2018)
10.25	Second Amendment to License Agreement dated March 31, 2018 by and between CSSC and the Company.
10.26	Risk Allocation, Consulting and Services Agreement dated April 1, 2008 by and between Snoddy Management, Inc. ("SMI") and the Company. (incorporated by reference to Exhibit 10.25 to the Company's Form 10-K filed with the Commission on March 8, 2018)
10.27	First Amendment to Risk Allocation, Consulting and Services Agreement dated September 24, 2012 by and between SMI and the Company. (incorporated by reference to Exhibit 10.26 to the Company's Form 10-K filed with the Commission on March 8, 2018)
10.28	Second Amendment to Risk Allocation, Consulting and Services Agreement dated March 31, 2018 by and between SMI and the Company.
10.29	Company's Employee Stock Purchase Plan, as amended (incorporated by reference from Appendix A to the Company's Definitive Proxy Statement filed April 5, 2017, relating to the Company's 2017 Annual Meeting of Stockholders).*

Exhibit Number	Description
10.30	Lease Agreement for Broomfield, Colorado office space dated August 20, 2018 between Semaho, Inc. and the Company (incorporated by reference to Exhibit 10.28 to the Company's Form 10-Q filed on October 25, 2018).
21.1	Subsidiaries of the Company.
23.1	Consent of Ernst & Young LLP, Independent Registered Public Accounting Firm.
31.1	Certification of the President and Chief Executive Officer pursuant to 17 CFR 240.13a-14(a) or 17 CFR 240.15d-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
31.2	Certification of the Chief Financial Officer pursuant to 17 CFR 240.13a-14(a) or 17 CFR 240.15d-14(a), as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.
32.1	Certification of the President and Chief Executive Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
32.2	Certification of the Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101	The following materials from the Annual Report on Form 10-K of DMC Global Inc. For the year ended December 31, 2015, formatted in XBRL (eXtensible Business Reporting Language): (i) the Consolidated Balance Sheets, (ii) the Consolidated Statements of Operations, (iii) the Consolidated Statements of Comprehensive Income, (iv) the Consolidated Statement of Stockholders' Equity, (v) the Consolidated Statements of Cash Flows, and (vi) the Notes to Consolidated Financial Statements.**

* Management contract or compensatory plan or arrangement.

** Pursuant to Rule 406T of Regulation S-T, the Interactive Data Files on Exhibit 101 hereto are deemed not filed or part of a registration statement or prospectus for purposes of Sections 11 or 12 of the Securities Act of 1933, as amended, are deemed not filed for purposes of Section 18 of the Securities and Exchange Act of 1934, as amended, and otherwise are not subject to liability under those sections.

SIGNATURES

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

DMC Global Inc.

February 24, 2020	By:	/s/ Michael Kuta
		Michael Kuta
		Chief Financial Officer

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the Company and in the capacities and on the dates indicated.

SIGNATURE	TITLE	DATE
/s/ Kevin T. Longe	President and Chief Executive Officer and Director	February 24, 2020
Kevin T. Longe	(Principal Executive Officer)	
/s/ Michael Kuta	Chief Financial Officer	February 24, 2020
Michael Kuta	(Principal Financial and Accounting Officer)	
/s/ David C. Aldous	Chairman and Director	February 24, 2020
David C. Aldous		
/s/ Andrea E. Bertone	Director	February 24, 2020
Andrea E. Bertone		
/s/ Yvon Pierre Cariou	Director	February 24, 2020
Yvon Pierre Cariou		
/s/ Robert A. Cohen	Director	February 24, 2020
Robert A. Cohen		
/s/ Richard P. Graff	Director	February 24, 2020
Richard P. Graff		
/s/ Clifton Peter Rose	Director	February 24, 2020
Clifton Peter Rose		

DMC GLOBAL INC.
INDEX TO SCHEDULE II
AS OF DECEMBER 31, 2019

DMC GLOBAL INC.
SCHEDULE II(a) - VALUATION AND QUALIFYING ACCOUNTS AND RESERVES
ALLOWANCE FOR DOUBTFUL ACCOUNTS

	Balance at beginning of period	Additions charged to income	Accounts receivable written off	Currency and Other Adjustments	Balance at end of period
Year ended -					
December 31, 2017	$ 1,146	$ 306	$ (174)	$ (190)	$ 1,088
December 31, 2018	$ 1,088	$ 282	$ (742)	$ (115)	$ 513
December 31, 2019	$ 513	$ 575	$ (36)	$ (85)	$ 967

DMC GLOBAL INC.
SCHEDULE II(b) - VALUATION AND QUALIFYING ACCOUNTS AND RESERVES
WARRANTY RESERVE

	Balance at beginning of period	Additions charged to income	Repairs allowed	Currency and Other Adjustments	Balance at end of period
Year ended -					
December 31, 2017	$ 525	$ 218	$ (466)	$ 74	$ 351
December 31, 2018	$ 351	$ 65	$ (13)	$ (9)	$ 394
December 31, 2019	$ 394	$ 39	$ (99)	$ (179)	$ 155

Exhibit 4.1

DESCRIPTION OF CAPITAL STOCK

Our authorized capital stock consists of 25,000,000 shares of common stock, par value $0.05 per share, and 4,000,000 shares of preferred stock, par value $0.05 per share.

Common Stock

Holders of shares of our common stock are entitled to one vote per share on all matters to be voted on by stockholders. The holders of our common stock are entitled to receive such dividends, if any, as may be declared from time to time by our board of directors out of funds legally available therefor. Upon our liquidation or dissolution, the holders of our common stock are entitled to share ratably in the distribution of assets, subject to the rights of the holders of shares of preferred stock, if any. Holders of our common stock have no preemptive rights, subscription rights or conversion rights. There are no redemption or sinking fund provisions with respect to the common stock.

Preferred Stock

Our certificate of incorporation authorizes our board of directors to establish one or more series of preferred stock and to determine, with respect to any series of preferred stock, the terms and rights of the series, including dividend rights, conversion rights, exchange rights, terms of redemption, redemption price or prices, liquidation preferences, the number of shares constituting any series and the designation of such series. The rights of the holders of common stock will be subject to, and may be adversely affected by, the rights of the holders of any preferred stock issued by us.

Purposes and Effects of Certain Provisions of Our Certificate of Incorporation and Bylaws

General

Our certificate of incorporation and bylaws contain provisions that could make more difficult the acquisition of control of our company by means of a tender offer, open market purchases, a proxy contest or otherwise. A description of these provisions is set forth below.

Preferred Stock

We believe that the availability of the preferred stock under our certificate of incorporation will provide us with flexibility in structuring possible future financings and acquisitions and in meeting other corporate needs which might arise. Having these authorized shares available for issuance will allow us to issue shares of preferred stock without the expense and delay of a special stockholders' meeting. The authorized shares of preferred stock, as well as shares of common stock, will be available for issuance without further action by our stockholders, unless action is required by applicable law or the rules of any stock exchange on which our securities may be listed. Our board of directors has the power, subject to applicable law, to issue series of preferred stock that could, depending on the terms of the series, impede the completion of a merger, tender offer or other takeover attempt. Our board of directors will make any determination to issue shares based on its judgment as to our and our stockholders' best interests. In so acting, our board of directors could issue preferred stock having terms which could discourage an acquisition attempt or other transaction that some, or a majority, of the stockholders might believe to be in their best interests or in which stockholders might receive a premium for their stock over the then prevailing market price of the stock.

Stockholder Action and Voting Provisions

Our certificate of incorporation (i) does not permit stockholders to act by written consent, (ii) permits our board of directors to amend our bylaws and requires that amendments to our bylaws approved by stockholders receive the approval of holders of two-thirds of all voting securities then outstanding and (iii) generally prohibits our stockholders from filling any vacancies that arise on our board of directors. In addition, an amendment to these provisions would require the approval of holders of two-thirds of all voting securities then outstanding. Further, our bylaws impose certain notice requirements on stockholders seeking to propose nominees for our board of directors or other business to be conducted at a stockholders' meeting.

Limitation of Director and Officer Liability

Our certificate of incorporation and bylaws contain provisions that (i) limit the liability of our directors and officers with respect to the performance of their duties to us and (ii) generally require us to indemnify and advance expenses to our directors and officers in connection with legal proceedings associated with such duties, in each case to the extent permitted by Delaware law. These provisions may have the effect of reducing the likelihood of derivative litigation against our directors and officers and may discourage or deter stockholders or management from bringing a lawsuit against our directors or officers for breach of their duty of care, even though such an action, if successful, might otherwise have benefited our company and its stockholders. These provisions do not limit or affect a stockholder’s ability to seek and obtain relief under federal securities laws.

Special Meetings of Stockholders

Our bylaws provide that special meetings of stockholders may be called only by our board of directors, the chairman of the board of directors, and our Chief Executive Officer.

SUBSIDIARIES OF THE COMPANY

Name of Subsidiary	State or Jurisdiction of Incorporation
DMC Korea Inc.	Colorado
DynaEnergetics Europe GmbH	Germany
DYNAenergetics Canada Inc	Canada
NobelClad Europe GmbH	Germany
DynaEnergetics US, Inc	Colorado
Dynamic Materials Corporation (HK) Ltd	Hong Kong
Nobelclad Europe Holdings GmbH	Germany
DYNAenergetics Siberia Limited	Russia
Nobelclad Europe SAS	France
Dynamic Materials Corporation (Shanghai) Trading Co. Ltd.	China

Exhibit 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in the following Registration Statements of DMC Global Inc. (the "Company"):

(1) Registration Statement (Form S-3 No. 333-216591),

(2) Registration Statements (Form S-8 No. 333-143355, Form S-8 No. 333-188796 and Form S-8 No. 333-211328) pertaining to the Company's 2006 Stock Incentive Plan,

(3) Registration Statements (Form S-8 No. 333-182979 and Form S-8 No. 333-218177) pertaining to the Company's Employee Stock Purchase Plan, and

(4) Registration Statement (Form S-8 No. 333-214460) pertaining to the Company's 2016 Omnibus Incentive Plan;

of our reports dated February 24, 2020, with respect to the consolidated financial statements and schedules of DMC Global Inc. and the effectiveness of internal control over financial reporting of DMC Global Inc. included in this Annual Report (Form 10-K) of DMC Global Inc. for the year ended December 31, 2019.

/s/ Ernst & Young LLP

Denver, Colorado
February 24, 2020

Exhibit 31.1

CERTIFICATIONS

I, Kevin T. Longe, certify that:

1. I have reviewed this annual report on Form 10-K of DMC Global Inc.;

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

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

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

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

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

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

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

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

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

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

Dated: February 24, 2020

/s/ Kevin T. Longe

Kevin T. Longe
President and Chief Executive Officer
of DMC Global Inc.

Exhibit 31.2

CERTIFICATIONS

I, Michael Kuta, certify that:

1. I have reviewed this annual report on Form 10-K of DMC Global Inc.;

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

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

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

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

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

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

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

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

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

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

Dated: February 24, 2020

/s/ Michael Kuta

Michael Kuta
Chief Financial Officer of DMC Global Inc.

Exhibit 32.1

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

In connection with the Annual Report of DMC Global Inc. (the “Company”) on Form 10-K for the period ended December 31, 2019 as filed with the Securities and Exchange Commission on the date hereof (the “Report”), I, Kevin T. Longe, President and Chief Executive Officer of the Company, certify pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

(i) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

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

February 24, 2020

/s/ Kevin T. Longe

Kevin T. Longe
President and Chief Executive Officer
of DMC Global Inc.

A signed original of this written statement required by Section 906 has been provided to DMC Global Inc. and will be retained by DMC Global Inc. and furnished to the Securities and Exchange Commission or its staff upon request.

Exhibit 32.2

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

In connection with the Annual Report of DMC Global Inc. (the "Company") on Form 10-K for the period ended December 31, 2019 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), I, Michael Kuta, Chief Financial Officer of the Company, certify pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

(i) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and

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

February 24, 2020

/s/ Michael Kuta
Michael Kuta
Chief Financial Officer of DMC Global Inc.

A signed original of this written statement required by Section 906 has been provided to DMC Global Inc. and will be retained by DMC Global Inc. and furnished to the Securities and Exchange Commission or its staff upon request.